

**Faculty of Informatics
and Information Technologies**

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ANNUAL REPORT 2014

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Katarína Jelemenská, Ivan Kotuliak, Tibor Krajčovič,
Pavol Návrat, Ľubica Palatinusová, Viera Rozinajová

Faculty of Informatics and Information Technologies
Slovak University of Technology in Bratislava
Ilkovičova 2
842 16 Bratislava, Slovakia

Visit FIIT STU on the Web: www.fiit.stuba.sk

Executive Editor: Katarína Mršková
Copy Editor: Soňa Breznenová, Lucia Falbová

Text Design & Composition: Katarína Mršková

Cover Designer: Peter Kaminský

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1 Message from the dean



Year 2014 was for the Faculty of Informatics and Information technologies STU very important. Some interesting cooperations and several laboratories were created. These projects will significantly improve the quality of education at our faculty. It allows a better access to the specific tasks from practice as well as a closer contact with experts.

Each new laboratory offers an excellent opportunity to achieve better results in the work with students. Fundamentals received during an educational process of individual subjects can be immediately tested and tried on the actual tasks. We appreciate that more and more companies would like to collaborate with our faculty. It is a great sign that we are on the right way. We receive

the feedback in the form of the most desired graduates.

An actual situation at Slovak Universities is marked by a decreasing number of students in secondary schools. Declining demographic curve delivers a lower number of secondary school students, who continue their studies at universities. Almost all schools in Slovakia recorded the loss of prospective university students. So I am glad that our faculty does not have this problem and number of students interested in the studies at FIIT is growing.

To the next period we expect many challenges related also to the number of students. It commits us to continue providing the quality education which is very important for students as well as for the whole society.

A handwritten signature in cursive script, reading "Pavel Čičák".

Assoc. Prof. Pavel Čičák
Dean of the FIIT STU

2 Faculty Management Bodies

According to the Act No. 131 of February 21, 2002 (the University Code and Amendments and Supplements to some Acts and subsequent acts that have amended them), the faculty management is to be formed out of its academic community members. It is composed of lecturers and research workers (representing the employee part of the academic community of the faculty) and of students (representing the student part of the academic community of the faculty).

According to the University Code, academic management bodies of a faculty are the following:

- a) the Academic Senate of the faculty,
- b) the Dean,
- c) the Scientific Board of the faculty,
- d) the Disciplinary Commission of the faculty for students.

2.1 Academic Senate of the Faculty

The Academic Senate of a faculty is a representative body of the faculty. It comprises of the employee part and the student part.

Members of the Academic Senate in 2014

Presidium of the Academic Senate
presidium@as.fiit.stuba.sk



*Pavol Návrat, Professor
chair*
chair@as.fiit.stuba.sk

Ladislav Hudec
chairman of the employee section

Jakub Ševcech
chairman of the student section

Secretary of the Academic Senate

secretary@as.fiit.stuba.sk

Mária Hricová (till August 2014)

Viera Danišová (since September 2014)

Members of the faculty section of the Academic Senate

staff@as.fiit.stuba.sk

Dušan Bernát (till April 2014)

Mária Bieliková, Professor

Miroslav Galbavý (till September 2014)

Ladislav Hudec, Assoc. Professor

Gabriela Kosková, PhD.

Margaréta Kotočová, Assoc. Professor (till June 2014)

Peter Lacko, PhD. (since October 2014)

Pavol Návrat, Professor

Marián Šimko, PhD. (since July 2014)

Jakub Šimko, PhD. (since May 2014)

Juraj Štefanovič, PhD. (till June 2014)

Peter Trúchly (since July 2014)

Members of the student section of the Academic Senate

students@as.fiit.stuba.sk

Lukáš Csóka (since April 2014)

Marek Galinski (since October 2014)

Barbora Pavlíková

Peter Pišteň (till April 2014)

Jakub Ševcech

Veronika Štrbáková (till October 2014)

Activities of the Academic Senate of the Faculty in 2014

The Academic Senate of the Faculty of Informatics and Information Technologies in 2014

- discussed the proposal of Rules for forming study plans, conditions for continuation of study and for regular completion of study, and took note of the proposed recommended study plans for each study programme as presented by the Dean,
- approved the additional conditions for admission to the study programmes offered by the faculty, presented by the Dean,
- approved the budget of the Faculty, presented by the Dean,
- approved the annual report on activities and annual financial report of the Faculty, presented by the Dean,
- submitted the annual report on its activity to the academic community of the Faculty,

- approved new members of the Disciplinary Commission of the Faculty, as presented by the Dean.

Prof. Pavol Návrat
Chair Academic Senate FIIT STU

2.2 Dean

The Dean is the representative of the Faculty who manages, represents and acts on behalf of the faculty. The current Dean was elected by the Academic Senate of the Faculty in its meeting held on October 24, 2011 and appointed by the Rector to his office on December 2, 2011 for a four year office term Vice-Deans were approved by the Academic Senate in November 2011.

Dean and Vice-Deans



Pavel Čičák, Assoc. Professor
Dean
dean@fiit.stuba.sk



Viera Rozinajová, Assoc. Professor
Vice-Dean for Research
vicedean_research@fiit.stuba.sk



Ivan Kotuliak, Assoc. Professor
Vice-Dean for National and International Relations and for
Public Relations
vicedean_cooperation@fiit.stuba.sk



Daniela Chudá, Assoc. Professor
Vice-Dean for Education
vicedean_education@fiit.stuba.sk



Tibor Krajčovič, Assoc. Professor
Vice-Dean for Services and Development
vicedean_development@fiit.stuba.sk

2.3 Scientific Board of the Faculty

Members of the Scientific Board in 2014

Chair of the Scientific Board

Pavel Čičák, Assoc. Professor

Deputy chair of the Scientific Board

Viera Rozinajová, Assoc. Professor

Members from the academic community of the Slovak University of Technology

Mária Bieliková, Professor

Pavel Čičák, Assoc. Professor

Elena Gramatová, Assoc. Professor

Ladislav Hudec, Assoc. Professor

Daniela Chudá, Assoc. Professor

Gabriel Juhás, Professor

Margaréta Kotočová, Assoc. Professor

Ivan Kotuliak, Assoc. Professor

Tibor Krajčovič, Assoc. Professor

Oliver Moravčík, Professor

Ján Murgaš, Professor

Pavol Návrát, Professor

Jiří Pospíchal, Professor

Gregor Rozinaj, Assoc. Professor

Viera Rozinajová, Assoc. Professor

Peter Volauf, Assoc. Professor

External members

Ladislav Hluchý, Assoc. Professor – Institute of Inf., Slovak Academy of Sciences

Tomáš Hruška, Professor – Brno University of Technology

Ivan Kalaš, Professor – Comenius University in Bratislava

Hana Kubátová, Assoc. Professor – Czech Technical University in Prague

Karol Matiaško, Professor – University of Žilina

Jiří Šafařík, Professor – University of West Bohemia in Pilsen

Jaroslav Šušol, Professor – Comenius University in Bratislava

Liberius Vokorokos, Professor – Technical University in Košice

Honourable members

Pavol Horváth, Professor

Ľudovít Molnár, Professor

Activities of the Scientific Board of the Faculty in 2014

The Scientific Board of the Faculty of Informatics and Information Technologies in 2014:

- evaluated the level of the Faculty regarding its educational activity and activities in the field of science and technology,
- discussed and approved the proposal of the study programmes for the academic year 2014/15 offered by the Faculty,
- endorsed other experts with the right to conduct Final examinations in the study programmes offered by the Faculty (in accordance with the University Code),
- endorsed members of the Board of Specialists for doctoral study programmes,
- endorsed supervisors for doctoral study programmes (in accordance with the University Code),
- endorsed the habilitation board.

Assoc. Professor Pavel Čičák
Chair of the Scientific Board FIIT STU

2.4 Disciplinary Commission of the Faculty for Students

The Disciplinary Commission of a faculty according to the University Code shall discuss misdemeanours of students and submit the proposal to the Dean who will resolve on it.

Members of the Disciplinary Commission for Students in 2014

Chair of the Disciplinary Commission of the Faculty for Students

Ladislav Hudec, Assoc. Professor

Members of the Disciplinary Commission of the Faculty for Students

Anna Bou Ezzeddine (since September 2014)

Boris Dado (till June 2014)

Ján Hudec (since September 2014)

Ivan Kapustík

Juraj Štefanovič (till June 2014)

Jozef Filipek – student of the doctoral degree programme (since September 2014)

Peter Jurík – student of the doctoral degree programme (till August 2014)

Ladislav Gallay – student of the bachelor degree programme (since September 2014)

Martin Janík – student of the master degree programme

Matúš Michalko – student of the master degree programme (till June 2014)

Jana Podlucká – student of the bachelor degree programme (till June 2014)

Jana Podlucká – student of the master degree programme (since September 2014)

Assoc. Prof. Ladislav Hudec
Chair Disciplinary Commission for Students FIIT STU

3 Study

3.1 Undergraduate Study (Bc)

In the academic year 2014/15 two accredited study programmes with regular length three or four years were offered:

- *Informatics*
- *Computer and Communication Systems and Networks*

The following table shows the numbers of full-time bachelor programme students throughout the study (from the first to the final year) for last eight years.

Numbers of the full-time bachelor programme students

	1 st year	2 nd year	3 rd year	4 th year ¹
Academic year				
2005/2006	344 (230/114)	262 (176/86)	91 (54/37)	92
2006/2007	332 (221/111)	269 (192/77)	246 (163/83)	19
2007/2008	290 (195/95)	272 (188/84)	266 (186/80)	1
2008/2009	265 (181/84)	229 (159/70)	308 (215/93)	-
2009/2010	291 (189/102)	169 (124/45)	244 (170/74)	-
2010/2011	253 (172/81)	196 (143/53)	190 (141/49)	-
2011/2012	444 (291/153)	173 (123/50)	198 (142/56)	-
2012/2013	492(305+52/10+25)	214 (161/53)	156 (109/47)	-
2013/2014	501(258+67+127+49)	262(177+55+18+12)	199(142+57)	-
2014/2015	436(241+124+71)	321(192+70+39+20)	254(174+14+54+12)	-

Note: First number in parentheses refers to number students in study programme Informatics, second number refers to number students in study programmes Computer Systems and Networks or Computer and Communication Systems and Networks.

In June 2014 the students defended their bachelor theses and passed the final examination.

¹ Only the students in study programme Informatics.

The following students were conferred awards for their excellent study results:

- “*Magna cum laude*”: Dušan Cymorek, Tomáš Drutarovský, Peter Gašpar, Eduard Kubinec, Lukáš Markovič, Filip Mazán, Matúš Pikuliak, Michal Polko, Juraj Šimek, Martin Tamajka, Peter Truchan
- “*Cum laude*”: Matej Liskovec, Tomáš Morvay, Veronika Olešová, Slavomír Šárik
- *Dean’s Award for Excellent Bachelor Thesis*: Tomáš Morvay, Juraj Šimek, Martin Tamajka
- *Dean’s Commendatory Letter for Bachelor Thesis*: BánaĎ David, Roman Cekovský, Tomáš Drutarovský, Peter Gašpar, Eduard Kubinec, Matej Liskovec, Tomáš Morvay, Veronika Olešová, Matúš Pikuliak, Michal Polko, Slavomír Šárik, Juraj Šimek, Martin Tamajka

3.2 Master Study (Ing)

In 2014, FIIT STU offered three accredited study programmes with regular length two or three years²:

- *Software Engineering (SI)*,
- *Computer and Communication Systems and Networks (CCSN)*,
- *Information Systems (IS)*.

The following table shows the numbers of full-time master programme students throughout the study for last ten years.

Numbers of the full-time master programme SI, CSN (CCSN), IS students

		all	SI	CSN or CCSN	IS
Academic year	2005/2006	231	119	73	39
	2006/2007	290	124	106	60
	2007/2008	326	141	113	72
	2008/2009	362	154	110	98
	2009/2010	394	160	128	106
	2010/2011	395	157	126	112
	2011/2012	355	155	100	100
	2012/2013	149	74+2	42+1	29+1
	2013/2014	287	115	74	98
	2014/2015	298	74+1+2	73+1	143+4

On the course we have 2 overseas students and 10 students abroad.

In these study programmes the students graduated in June 2014.

- “*Magna cum laude*”: Martin Geier, Juraj Kostolanský

² Three years for students who have not obtained their first degree in related field.

- “*Cum laude*”: Peter Dulačka, Jozef Gajdoš, Ivana Hucková, Ondrej Kaššák, Andrej Kincel, Martin Konôpka, Matúš Michalko, Juraj Obetko, Filip Pakan, Juraj Šubín, Matúš Ujhelyi
- *Dean’s Award for Excellent Master Thesis*: Ondrej Kaššák, Juraj Kostolanský, Juraj Šubín
- *Institute of Inf., Slovak Academy of Sciences Award for Excellent Master Thesis*: Jozef Gajdoš, Andrej Kincel
- *Slovak Academy of Sciences Award for Excellent Master Thesis*: Peter Dulačka, Filip Pakan
- *Dean’s Commendatory Letter for Master Thesis*: Peter Dulačka, Ivana Hucková, Ondrej Kaššák, Andrej Kincel, Martin Konôpka, Juraj Kostolanský, Marek Lóderer, Matúš Michalko, Juraj Obetko, Filip Pakan, Juraj Šubín, Matúš Ujhelyi, Zuzana Ujhelyiová

3.3 Doctoral Study (PhD)

Quality and number of doctoral students significantly influence the results obtained in research. We still observe an insufficient number of motivated doctoral students in the fields of informatics and information technologies. The graduates have excellent opportunities in finding positions in the labour market, therefore, even if they are interested in further studies they often prefer to be admitted as part-time students.

This trend has been slightly reversed in recent years. Number of applicants increased 2 times compared to year 2008 and for several years we maintain a stable number of accepted applicants. We worked towards motivating students to finish their theses. This resulted in increased number of defended dissertation theses – 9 this year (most doctoral students who finished their study this year started doctoral study more than three years ago).

Evolution of number of doctoral full-time students (year-end figures)

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Num of students	22	24	25	30	34	43	48	47	47	61

In 2014 two accredited study programmes were offered:

- *Applied Informatics*,
- *Program Systems*

Regular length of all doctoral study programmes is 3 years for full-time study and 5 years for part-time study.

In 2014 following dissertations were defended:

- *Michal Kompan*: Group and Single-user Influence Modeling for Personalized Recommendation (Software Systems, supervisor: Mária Bielíková)
- *Tomáš Kramár*: Utilizing Lightweight Semantics for Search Context Acquisition in Personalized Search (Software Engineering, supervisor: Mária Bielíková)

- *Dušan Zeleník*: Reducing the Sparsity of Contextual Information for Recommendation (Software Engineering, supervisor: Mária Bielková)
- *David Chalupa*: Partitioning Networks into Cliques: A Randomized Heuristic Approach (Applied Informatics, supervisor: Jiří Pospíchal)
- *Juraj Pálfy*: Analysis of Dysfluencies by Computational Intelligence (Applied Informatics, supervisor: Jiří Pospíchal)
- *Peter Vilhan*: Secure Access Control in Distributed Environment (Applied Informatics, supervisor: Ladislav Hudec)
- *David Levy*: WLAN power save by header compression and packet overhearing reduction (Applied Informatics, supervisor: Ivan Kotuliak)
- *Peter Pišteck*: New multiplexer-based swithing circuit synthesis methods (Applied Informatics, supervisor: Milan Kolesár)
- *Ján Hudec*: Contribution to the Methods and Algorithms of Automatic Generation of Functional Tests for Processors (Applied Informatics, supervisor: Elena Gramatová)

3.4 Student Conferences and Competitions

The Faculty organised and supported in 2014 several student competitions and conferences. The importance of involvement of the students in such events is very high. Students took active participation in various technical and research activities (co)organised by the Faculty. We are proud to list also successes of our students in national and international competitions organized outside our university.

Imagine Cup

- category Imagine Cup Online Finals: Kamil Burda, Rudolf Grežo, Marek Hasin, Lukáš Kohútka (supervisor: M. Nagy)
- category Innovation: Filip Mikle, Matej Minárik, Juraj Slavíček, Martin Tamajka (supervisor: J. Šimko)

IIT.SRC 2014 – Informatics and Information Technologies Student Research Conference
(to be mentioned in the following section in more detail)

NAG 2014 – national CISCO competition

- Viliam Straka – 3rd place in category UNI
- Tomáš Boroš – 4th place in category UNI

NAG 2014 – Middle European regional CISCO competition

- Vladimír Kuchár – 1st place

ACM SPY – Student Project of the Year Czech and Slovak Competition

- Ondrej Kaššák – 3rd place with diploma project *Group Recommendation for Smart TV* (supervised by M. Kompan)

RoboCup, Soccer Simulation League

- Winners of the Slovak University of Technology RoboCup 2014, 3D Team Gitmen: Filip Blanárik, Michal Blanárik, Štefan Linner, Roman Moravčík, Tomáš Nemeček

TP Cup

- Best Team of the year 2014 winners: Rastislav Dobšovič, Marek Grznár, Jozef Harinek, Samuel Molnár, Peter Páleník, Dušan Poizl, Pavol Zbell: Askalot, supervisor: I. Srba

ACMICPC

- 2nd place within participating slovak universities, advanced to Middle European regional round (Ladislav Gallay, Martin Kalužník, Tibor Žuffa)

3.5 Awarded Theses**Excellent Bachelor Theses**

Student name: Tomáš Morvay
Thesis title: *SQL Attack Detection System*
Supervisor: Rastislav Szabó
Defended on: May 2014
Degree program: Computer and Communication Systems and Networks
Annotation: This bachelor project analyzes the most frequent web server attacks, as well as approaches to their detection. For various types of attacks it introduces simple examples. It also presents famous cases of misuse of some of these attacks in real world. The project aims at possibilities of detection of attacks in SQL queries sent by applications running on web server to database server for processing. A detailed description of anomaly-based detection against normal behavior, as well as detection models they utilize can be found in this project. It also includes a description of basic principles of signature-based attack detection. Furthermore it introduces a selection of existing solutions to this issue. Described methods of anomaly detection in SQL queries are used in plugin form MySQL database server. An anomaly detection plugin for string length, which uses Chebyshev's inequality, is implemented. Plugin is easily extensible by other models of detection. A detailed description of design and implementation of plugin can be found in relevant sections of this document. Detection characteristics of plugin for detection of anomalies in SQL queries were verified with test comprising SQL queries, in which various forms of the most common attacks were placed randomly.

Student name: Juraj Šimek
Thesis title: *Generating of DNA Sequences*
Supervisor: Gabriela Kosková, PhD.
Defended on: May 2014
Degree program: Informatics
Annotation: The increasing performance of computing machines allowed us to use computers in the field of the biology and the medicine. That is the reason of creation a new scientific discipline called bioinformatics. Research of DNA is one of many studied fields in bioinformatics. To do this research, we need to sequence DNA molecules using DNA sequencers. Unfortunately, we are not able to read the whole DNA as a single string. We obtain a lot of short sequences called reads, which

are overlapping each other in some way instead of a one long sequence. It is necessary to assembly these reads by programs called assemblers. It is still important to create new assemblers, which will be faster and which will *have* a higher quality of assembly. It is necessary to test these newly developed algorithms. This bachelor thesis introduces a parameterized generator of DNA reads for a purpose of assemblers testing. It is important to have some knowledge about the structure of DNA and about methods of DNA sequencing, which are described in this work in enough detail. At the end of this work, generated sequences are used to evaluate simple algorithm of de novo DNA read assembly.

Student name: Martin Tamajka
Thesis title: *Innovative Application Within an International Competition*
Supervisor: Jakub Šimko, PhD.
Defended on: May 2014
Degree program: Informatics
Annotation: Buying and selling a real estate through the real estate agencies are very time-consuming, as the most of the buyers must look through more of them, until they find the right one. In the Imagine Cup 2014 competition, our goal was to propose and implement an application, that makes these processes easier. We wanted to make it possible to the real estate agents to easily create the 3D models of the offered estates just by using Kinect (using up its ability to catch the depth information), without the need to acquire extensive knowledge of model creation. The acquirement of the 3D model should be similar to shooting with ordinary video camera. We assume, that these models, presented through the web browser, could provide a sufficient overview of the real estate without the need to personal visit. Apart from the global project overview, this thesis concerns the problematic author focused on: Kinect data processing, computer-vision methods used in the application and the creation of the final 3D model in the form of point cloud through the continual registration process.

Excellent Master Theses

Student name: Jozef Gajdoš
Thesis title: *Identification of Paraphrasing in Text Documents*
Supervisor: Tomáš Kučečka
Defended on: May 2014
Degree program: Software Engineering
Annotation: The goal of this thesis is to present to the reader various methods that deal with paraphrasing identification and preprocessing of natural text. Next goal is to design and implement own method for paraphrasing identification in Slovak language. This work gives an overview of existing methods for preprocessing in Slovak language and also discusses several approaches that identify paraphrasing in English language. The main result of our work is a created method for identifying paraphrasing in the Slovak language using SVM (support vector machines) together with appropriate preprocessing methods. Another

important output of this work is created library for morphological tagging of sentences written in Slovak language. Our implemented system achieves accuracy 93% in identification of paraphrasing, this was achieved by using a pre-processing method called Combined method and conversion method called Simple representation. In this work we also deal with other methods of text pre-processing and information overlap.

Student name: Peter Dulačka
Thesis title: *Game with a Purpose as a Mean for Metadata Acquisition and Authority Discovery*
Supervisor: Jakub Šimko, PhD.
Defended on: May 2014
Degree program: Software Engineering
Annotation: Not every task can be automated by machine and these kinds of tasks tend to be solvable by human easily and faster. This is also the main idea of crowdsourcing. One of the means of motivating crowd to do such tasks are Games with a Purpose (GWAP). Current problem of GWAPs is efficient utilization of the crowd, because data acquired from anomalous individuals are not considered into created dataset. In this project we created GWAP being able to handle the crowd efficiently. We aim this goal by finding experts among individuals in crowd and promoting them above average individuals. The standard utilization of crowd remains and gets improved by expertise of educated players. Expert finding is based on direct comparison of players which are listeners of our custom-created internet radio. They're quizzed with facts related to song they are listening to. Then, based on given query, we search for experts among players meeting given boundaries. Experts are utilized to improve and fasten the process of metadata generation in crowdsourcing games. We compare quality of metadata generated when all players are equal to each other and when some users are favored over others due to their expert score.

Student name: Ondrej Kaššák
Thesis title: *Group Recommendation for Smart TV*
Supervisor: Michal Kompan, PhD.
Defended on: May 2014
Degree program: Software Engineering
Annotation: This thesis deals with personalized recommendations to groups of users in the domain of multimedia content. Within this domain it specializes in recommendation for smart television in meaning of recommendation movies from big databases. Wide range of available content in these televisions and their archives gives rise to the information overload problem. Personalized recommendation represents one of possible solutions of this problem. Since watching television is often a group activity, it is appropriate to adapt recommendation to needs of groups rather than to individuals. In this thesis we analyze existing approaches and systems dealing with the issue of group recommendation of multimedia content. We design a vector user model

using different importance of individual vectors. The importance of them is based on user's individual preference of contained metadata types and on the global vector weights. We then propose our mixed hybrid method using aggregated collaborative recommendation for individual group members, complemented by aggregated individual content based recommendation. The proposed method considers social context, in meaning of relationships between group members represented by connections on social networks. Next to the group recommendation is method usable for purposes of personalized recommendation for individual users.

Student name: Andrej Kincel
Thesis title: *Test and Dependable Methods for RISC Processor*
Supervisor: Marcel Baláž, PhD.
Defended on: May 2014
Degree program: Computer and Communication Systems and Networks
Annotation: The master's thesis deals with testing and reliability methods for LEON3 processor. The reliability parameters (R and the mean time to failure) are improved with use of the Built-in Self-Repair architecture, which is implemented as the Reconfigurable Logic Blocks architecture. The thesis includes an analysis of the general Built-in Self-Repair procedure where also the repair granularity is considered. Further, the work discusses the Reconfigurable Logic Blocks architecture. The important parts of the Reconfigurable Logic Blocks architecture are analyzed at the transistor level. Specific LEON3 hardware multiplier structure is examined on the hierarchy level required for the multiplier segmentation into several Reconfigurable Logic Blocks. As the result, the multiplier architecture with a self-repair wrapper is proposed and implemented. The test algorithm necessarily required in self-repair procedure is proposed and implemented too. Simulations verify the functionality of the new reconfigurable multiplier. Evaluation of the area overhead required for Built-in Self-Repair, multiplier reliability parameters and fault coverage of the test algorithm, shows significant results, which are presented at the end of the thesis.

Student name: Juraj Kostolanský
Thesis title: *Analysis of Source Code Evolution using Abstract Syntax Tree*
Supervisor: Peter Lacko, PhD.
Defended on: May 2014
Degree program: Software Engineering
Annotation: Nowadays is considerable effort devoted to mining information from various source codes, as well as from supporting tools for creating software systems. This information includes those related to changes over time in source code of programs. There are many possible applications for this information about software system evolution, such as bug prediction, project management, risk management, human resource allocation, project monitoring, and many others. In this thesis we survey the problem of the source code analysis and its evolution. Syntax trees enable us to retain the hierarchical structure of a source

code. We analyze existing solutions and approaches in this research area and we propose our own solution. This allows a detection of changes in source codes by comparing two versions of the same source code of a software system. Our solution is based on three different types of nodes matching - subtree matching, bottom-up matching of inner nodes and leaf matching. We tested our method on source codes from real-world software projects.

Student name: Filip Pakan
Thesis title: *Evolutionary Generation of Error-correcting Codes*
Supervisor: Jiří Pospíchal, Associate Professor
Defended on: May 2014
Degree program: Software Engineering
Annotation: In today's interconnected world we experience a huge amount of data being transmitted over the network. However, sometimes errors may occur in transmitted data due to electromagnetic interference and thermal noise. Encoding the message in a redundant way by using an error-correcting code gives receivers the ability to recover corrupted data. Larger error-correcting codes allow more messages to be encoded and hence improve communication efficiency. Unfortunately, the generation of error-correcting codes is equivalent to NP-complete problem of finding maximum clique in a graph. An exhaustive search for a solution is not feasible due to the exponential complexity of the problem. One possibility is to employ stochastic optimization algorithms inspired by biological evolution. Evolution is a process where optimal solution may emerge after many generations. This work analyzes recent evolutionary approaches to the generation of optimal error-correcting codes and finding the maximum clique in a graph. The goal of this project is to design an evolutionary heuristic or to improve existing method for the generation of error-correcting codes and to compare designed solution to the selected methods.

Student name: Juraj Šubín
Thesis title: *Built-in self-test and Self-repair for Embedded RAM Memories*
Supervisor: Štefan Krištofik
Defended on: May 2014
Degree program: Computer and Communication Systems and Networks
Annotation: This master's thesis deals with the design and implementation of built-in self-test architecture and built-in repair analysis architecture for embedded RAM memories. The final architecture allows self testing and repairing of RAM memory. The built-in self-test and built-in repair analysis architecture designs are focused on obtaining high fault coverage and high repair rate, respectively. The built-in self-test architecture is based on micro-codes technique, because the micro-coded built-in self-test is the most flexible of all self-test structures. Redundancy analysis algorithm consists of a must-repair phase and a final-repair phase, in which an exhaustive search algorithm is performed. The information about detected faults is stored in a bitmap. This project contains the analysis of a structure of RAM memory, analysis of

fault models, analysis of march algorithms, analysis of built-in self-test and built-in repair analysis blocks for RAM memories and analysis of modern approaches to design and implementation of these blocks. It also contains design and specification requirements of architecture elements and the implementation description of parts of the architecture. The project is concluded with a chapter dealing with testing of implemented architecture and the evaluation of the area overhead for various numbers of spares and various memory sizes.

Assoc. Prof. Daniela Chudá
Vice-Dean for Education (first and second levels)

Assoc. Prof. Viera Rozinajová
Vice-Dean for Research (including the third level education)

4 Research

4.1 Research Areas

The economic and social development is featured by an exponential growth of new scientific knowledge today. Informatics and information technologies are playing the key role. They boost the development of all scientific branches with the creation of new methodological base to do research and development. The development time decreases and the traditional theoretical and experimental abilities are extended broadly.

Informatics has developed to be an autonomous scientific area, which supports success not only in the branch of information technologies, but it also has wide consequences as for the lives of individuals and society. It is not a mere coincidence that research in the IIT area has become the priority among the research topics in the European Union.

Research at FIIT STU is oriented on these main research areas that respect the organisation, existing technical and laboratory equipment and professional skills:

- intelligent information analysis and processing in large information spaces, e.g. the World Wide Web,
- user experience design,
- personalized context-aware information and knowledge retrieval and recommendation for the adaptive social semantic web,
- Big Data analytics,
- methods for distributed information processing,
- advanced methods and tools for software systems design, development and integration,
- computer vision and computer graphics in virtual and augmented reality systems,
- advanced methods of computational intelligence oriented to “echo state” neural networks, recurrent neural networks, evolutionary algorithms,
- methods and tools for security and administration of network and mobile computer systems,
- methods and tools for mobile computing,
- formal specification and automated engineering tasks in the area of HW/SW co-design of the mobile computing systems,
- security, reliability and fault tolerance in distributed computer systems and mobile computer networks,
- methods for improvement of quality of service in the Next Generation Networks,

- design of digital systems and embedded systems.

FIIT STU recognizes as part of its mission to serve the broader academic community in Slovakia and also internationally in promoting cooperation in relevant fields. In 2014 FIIT STU supported the Slovak ACM Chapter activities. FIIT STU supported also the publishing Bulletin “Information Sciences and Technologies” – a web based scientific journal, activity initiated and executed by the ACM Slovakia Chapter.

4.2 Scientific Activities

In the year 2014, FIIT STU has organised or co-organised several scientific events:

- scientific conference Cognition and Artificial Life XIII,
- scientific conference Znalosti 2014,
- IEEE international conference ICETA 2014,
- scientific workshop WIKT 2014 – Workshop on Intelligent and Knowledge Oriented Technologies,
- World Usability Day 2014 (organized at FIIT STU),

regular scientific seminars organized at FIIT STU on:

- Personalized Web,
- Big Data Analytics,
- Artificial Intelligence,
- Vision and Computer Graphics.

The Faculty took part in providing technical and scientific programmes, especially through the work in programme committees of more than 35 conferences, mostly international:

- ACIIDS, Asian Conference on Intelligent Information and Database Systems,
- ADBIS, East-European Conference on Advances in Databases and Information Systems,
- ASONAM, International Conference on Advances in Social Networks Analysis and Mining,
- BCI, Balkan Conference in Informatics,
- CASoN, International Conference on Computational Aspects of Social Networks,
- CompSysTech, International Conference on Computer Systems and Technologies,
- Datakon, Annual Conference on the Current Trends in Databases and Information Systems,
- DDECS, IEEE Symposium on Design and Diagnostics of Electronic Circuits and Systems,
- ECBS-EERC - Eastern European Regional Conference on the Engineering of Computer Based Systems,
- ENASE, International Working Conference of Evaluation of Novel Approaches to Software Engineering,
- ETS, IEEE European Test Symposium,

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- EWDTS - East-West Design & Test Symposium,
 - HT, ACM Conference on Hypertext and Hypermedia,
 - ICCCI, International Conference on Collective Intelligence Technologies and Applications,
 - ICETA, International Conference on Emerging E-Learning Technologies and Applications,
 - ICWL, International Conference on Web-based Learning,
 - IEEE International Conference on Information Technology,
 - Informatics, International Scientific Conference on Informatics,
 - International Conference on Soft Computing Models in Industrial and Environmental Applications,
 - ITAT, Workshop on Information Technologies – Applications and Theory,
 - LMPCNA International Workshop on Learning Methodologies and Platforms,
 - MCCIS-ISA, IADIS International Conference, Intelligent Systems and Agents Conference,
 - MENDEL, International Conference on Soft Computing,
 - Nostradamus conference,
 - NWESP, International Conference on Next Generation Web Services Practices,
 - PAD, Czech and Slovak Seminar on Computer Architectures and Diagnostics,
 - PALE, International Workshop on Personalization Approaches in Learning Environments,
 - SAMI, International Symposium on Applied Machine Intelligence and Informatics,
 - SERA, International Conference on Software Engineering Research, Management and Applications,
 - SMAP, International Workshop on Semantic Media Adaptation and Personalization,
 - SNAA, International Workshop on Social Network Analysis and Applications,
 - SOFSEM, Annual Conference on Current Trends in Theory and Practice of Informatics,
 - UMAP, International Conference on User Modelling, Adaptation and Personalization,
 - VERFE, Workshop on Dependability and Fault Tolerance,
 - WEBIST, International Conference on Web Information Systems and Technologies,
 - WIKT, Workshop on Intelligent and Knowledge oriented Technologies,
 - WWW, Web Engineering Track – International World Wide Web Conference,
 - WWW/Internet – IADIS International Conference on WWW/Internet,

- Znalosti, Annual Conference on Knowledge Acquisition, Representation and Exploitation.

In 2014, FIIT STU organised or co-organised several events aimed at exhibition of students' research work. Above all, the most important event was the 10th *Informatics and Information Technologies Students Research Conference – IIT.SRC 2014*, which was held on April 29, 2014.

At IIT.SRC 2014 were accepted 104 (25 bachelor, 64 master, 15 doctoral students as authors) submitted by 120 student authors.

Papers were in two categories: full papers (further organized as researching solutions and developing innovative solutions) and extended abstracts.

The conference was organized in five sections:

- Computer Networks, Computer Systems and Security
- Computer Graphics, Multimedia and Computer Vision
- Computer Science and Artificial Intelligence
- Intelligent Information Processing
- Software Engineering
- Web Science and Engineering

The Conference was opened by a keynote of Jiří Matas (Faculty of Electrical Engineering, Czech Technical University, Prague) titled: “What can be discovered from the pictures? Computer vision - what are we able to do and what can we expect in the future?”

The excellent student papers were awarded. The best paper award was conferred to:

- *category of doctoral students* – Peter Krátky (Patterns in Browsing the Web: Distinguishing Computer Mouse Usage Characteristics, supervisor D. Chudá)
- *category of master students* – Andrej Kincel (Built-in Self-repair for a Processor Multiplier, supervisor M. Baláž)
- *category of bachelor students* – Juraj Šimek (Random DNA Read Generator, supervisor G. Kosková)

Dean's award was the highest appreciation. It was conferred to:

- *Veronika Olešová* (Generating a Saliency Map Using Superpixels, supervisor V. Benešová)
- *Ondrej Kaššák* (Weighted Vector User Model for Movie Recommendation, supervisor M. Kompan)
- *Juraj Kostolanský* (Analysis of Source Code Evolution Using Abstract Syntax Tree, supervisor P. Lacko)
- *Martin Konôpka* (Identifying Hidden Source Code Dependencies from Developer's Activity, supervisor M. Bieliková)

Besides the papers presented at the conference in two poster sessions several accompanied events were organized

- *RoboCup Exhibition*, where students presented interesting results in simulated league both 2D and 3D; RoboCup is an attractive project with free participation,

designed to support education and research in artificial intelligence, robotics and information technologies,

- *TP-Cup Showcase*, where eleven teams presented their projects; TP-Cup is a competition of master students' teams aimed at excellence in development information technologies solutions within two semester long team project module in master study programs.

IIT.SRC 2014 accompanying events included also programming competition, FiitaPixel – photo contest best pictures exhibition, games with a purpose tournament, RoboCup, and JUNIOR IIT.SRC 2014.

FIIT STU initiated in 2010 a join of two student competitions ACM CZ Student Research Competition organized by Czech ACM Chapter and Czech and Slovak Universities and Diploma Thesis Competition organized by IT company Profinit, which resulted in establishment of

- *Czech ACM Chapter & Slovakia ACM Chapter Student Project of the Year Competition – ACM SPY*

The ACM SPY 2014 Finals were organized in November 2014 in Prague, where 8 best master student projects were presented. The finalists projects were selected by the judges from the best thesis submitted by 15 Czech and Slovak universities based on 2027 successfully defended master thesis in 2013/14.

The project

- *Group Recommendation for Smart TV* authored by Ondrej Kaššák (supervisor M. Kompan) won the 3rd prize.

In September 2014 we actively participated in “The Night of Researcher”, event supported by European Commission. This event was organized in more than 150 European cities. Researchers in many countries prepared presentations from the field of science and research for the general public.

We are proud of ten FIIT STU student teams who presented their interesting research projects to public:

- *We know how much you blink* – Dominika Červeňová, Rastislav Dobšovič, Tomáš Drutarovský, Ján Handzuš, Lenka Kutlíková
- *The school in the pocket* – Lukáš Cáder, Martin Dušek, Michal Ševčík, Matej Toma
- *Amusing physiotherapy* – Kamil Burda, Rudolf Grežo, Marek Hasin
- *Augmented reality in the car* – Peter Hamar, Juraj Jarábek, Jakub Mercz, Martin Petluš, Peter Polatsek, Róbert Sabol, Lukáš Sekerák, Vanda Benešová
- *Amusement during travelling* – Ján Onder, Martin Polák, Tomáš Trávníček, Dávid Urbán, Lukáš Zemaník
- *Computer control via gestures and voice* – Jakub Daraz, Lukáš Gregorovič, Kristína Mišíková, Michal Meszaros, Jozef Tvarožek
- *Speekle: Even one letter is important* – Veronika Štrbáková, Miroslav Šimek, Ondrej Galbavý, Peter Demčák

4.3 Publications

Results of our research were published in 332 publications. 313 scientific contributions were published in conference proceedings, 50 out of which were published in reviewed proceedings of international conferences. 15 scientific contributions were published in scientific journals and we have authors (co-authors or editors) of 11 books or book chapters.

FIIT STU is a co-publisher of the international scientific journal “Computing and Informatics“ (until 2001 Computers and Artificial Intelligence). Three faculty staff members, P. Návrát, V. Kvasnička and J. Pospíchal were active in the editorial team in 2014 – P. Návrát as an Associate Editor and V. Kvasnička, J. Pospíchal as members of Editorial Board. Moreover, the faculty participates in editorial and advisory boards of eleven other scientific journals.

4.4 Research Projects

Research projects constitute an important basis for research realization and research funding. Life cycle of a research project includes its preparation, submission, acceptance of the project followed by the project realization. Because these periods take often several years, activities in certain period influence significantly results in the following period.

<i>Number of publications in 2014</i>	UAPI ³	UISI	UPSS	FIIT
Books and parts of books published by international/national publisher	1/-	1/1	-/1	-2/2
Scientific works published in international/national scientific journals	2/2	5/4	-/2	7/8
Scientific works published in international conference proceedings	8	31	11	50
Scientific works published in national or local conference proceedings	21	210	32	263
Conference proceedings editors	1	6	-	7

<i>Overview of other most significant activities in 2014</i>	UAPI	UISI	UPSS	FIIT
Membership in editorial boards of scientific journals	8	6	1	15
Membership in programme committees of international scientific conferences	4	30	6	40
Membership in programme committees of national or local scientific conferences	6	31	8	45
Membership in steering committees of scientific conferences	0	5	2	7

³ UAPI – Institute of Applied Informatics
 UISI – Institute of Informatics and Software Engineering
 UPSS – Institute of Computer Systems and Networks

Projects of the Scientific Grant Agency of the Ministry of Education and the Slovak Academy of Sciences (VEGA) and of the Slovak Research and Development Agency (APVV) formed an essential form of research organisation and scientific projects funding at the FIIT STU. In 2014

- eleven VEGA projects were progressed and three new projects were prepared for funding in 2015-2017,
- two APVV projects were progressed, and five new projects were prepared for funding in 2015-2018, (two of them were prepared in cooperation with FEI STU in Bratislava, one with Faculty of Philosophy Comenius University in Bratislava, one with Institute of Informatics Slovak academy of Science and R-DAS, s.r.o. in Žilina),
- one project of the Cultural and Educational Grant Agency of the Ministry of Education of Slovak Republic (KEGA) were progressed.

Mentioned projects are described in reports of institutes presented in the following parts.

The Faculty participated in three international projects (supervisors M. Bielíková, E. Gramatová, D. Chudá, M. Šimko).

<i>Number of projects funded in 2014</i>	UAPI	UISI	UPSS
VEGA ⁴	4	4	3
KEGA	-	-	-
APVV	-	2	-
European Structural Funds	-	2 [†]	1 [†]
International projects	-	3	1
Others /Tatra banka, grants for young scientific researchers	1	5	4
FIIT STU	5	16	9

[†] common projects

<i>Overview of funds (in Eur)</i>	UAPI	UISI	UPSS	SUM
VEGA	17 024	47 557	18 037	82 618
KEGA	-	14 619	-	14 619
APVV	-	50 260	-	50 260
European Structural Funds	-	168 178,30	-	168 178,30
Others	928	5 000	7 736	13 664
FIIT STU	17 952	285 614,30	25 773	329339,30

⁴ VEGA – Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences,
 KEGA – Cultural and Educational Grand Agency of the Ministry of Education of Slovak Republic,
 APVV – Slovak Research and Development Agency

Institute of Informatics and Software Engineering continued research project PerConIK – “Research of methods for Acquisition, Analysis and Personalized Conveying of Information and Knowledge“ acquired in the Call of the ERDF Agency directed towards applied research in collaboration with industry. This project led by Gratex Ltd. was approved in 2010 for financing for period of 2011-2014 (supervisor M. Bieliková). The institute also actively participates in the research project “International Centre of Excellence for Research of Intelligent and Secure Information-Communication Technologies and Systems”, ITMS 26240120039, co-funded by the ERDF (supervisor V. Rozinajová)

The projects are realized in our research laboratories (description can be found in the parts devoted to individual institutes). In 2014 the following laboratories were operated:

- Intelligent Systems Laboratory, manager: P. Návrat,
- Advanced Software and Web Technologies Laboratory, manager: M. Bieliková,
- Big Data Processing Laboratory, manager: V. Rozinajová,
- Networks Technology Laboratory I, manager: P. Trúchly,
- Networks Technology Laboratory II, manager: P. Trúchly,
- Embedded Systems Laboratory, manager: T. Krajčovič,
- Mobile Computing Laboratory, managers: M. Čerňanský, V. Vranić, I. Kotuliak,
- Digital Systems Design Laboratory, manager: K. Jelemenská,
- Communication Technologies Laboratory, manager: I. Kotuliak,
- FIIT – Molpir, Ltd. Laboratory, manager: P. Pištek,
- Grid Computing Laboratory, manager: L. Hudec,
- Laboratory of Computer Vision and Graphics, manager: V. Benešová.

Assoc. Prof. Viera Rozinajová
Vice-Dean for Research

5 National and International Relations

Cooperation of FIIT STU can be characterised from several viewpoints as cooperation with secondary schools, other higher education institutions, research institutes and cooperation with industry (a list of cooperating institutions can be found in the parts devoted to individual institutes).

5.1 Cooperation with Secondary Schools

Cooperation with secondary schools lies in preparation for study at the university especially at the FIIT STU, organising a programming contest ProFIIT, and in technical cooperation. Technical cooperation with secondary schools is achieved especially through the Networking Academy Programme. FIIT STU, as the Regional Networking Academy, guarantees publicity, programme quality, guidance of Local Academies, and regular technical training and consultations for teachers/instructors of secondary schools. In this way the Faculty leads, methodologically supervises and technically trains 24 secondary schools. Two very successful activities are yearly organised at the Faculty: TP CUP final in June and Open Day of the Faculty in December. Both events were organized also for students of secondary schools.

5.2 Cooperation with Industry

Cooperation with industry is oriented towards training and consultation activities and educational cooperation.

Training and Consultation Activities

FIIT STU has been very successful in training and consultations in cooperation with the companies Cisco System Slovakia, GTEC and Microsoft Slovakia. In cooperation with Cisco the Faculty has been integrated into the world-wide academy programme oriented to training in network technologies. Nowadays FIIT STU Regional Networking Academy offers a full 4-semester programmes CCNA (Cisco Certified Networking Associate) and CCNP (Cisco Certified Networking Professional).

Except above mentioned programmes FIIT STU offers programmes for IP Telephony, WiFi Communication, Network Security and other special courses.

In co-operation with GTEC Common Training and Consultation Centre (CTCC) offers various programmes. The main purpose of this centre is to offer technical training for the non-academy sphere.

Educational Cooperation

In the field of education and other activities the Faculty has been cooperating with important Slovak companies for many years. Academy training programmes were developed thanks to the support of cooperation with Cisco Systems Slovakia, Soitron, Siemens Enterprise Communications, DITEC, DATALAN, ASSECO Slovakia, HP Slovakia, Goldstein Fuchs, Tempest, Morgan Stanley Budapest

Some of above mentioned companies have directly co-operated in Faculty education.

Other remarkable support the Faculty has obtained in cooperation with IBM Slovakia, Microsoft Slovakia, SIEMENS, GRATEX, ACCENTURE, Q-Products. Cooperation with the above mentioned companies is based on special agreements.

Aj Ty v IT (You too in IT)

Aj Ty v IT (You too in IT) is a successful project of our faculty focused on attracting high school girls choosing their study in informatics. This project is a reaction to the low percentage of girls studying at FIIT – only 3%.

AJ Ty v IT prepares for girls various activities, such as discussions with women working in IT sector, computer science workshops, mentoring as a possibility to see the real life of students and courses. The aim is to show them that working in IT means having an interesting job, meeting interesting people and growing professionally. This project wants to demonstrate that girls and women are welcome in IT sector and they are able to find their place there.

The project started in March 2013. During one year, it grows on whole Slovakia and actually cooperates with partners Slovak universities oriented to computer science. The result after this period of activities is a growth of girl's student number to 10 %.

Digipoint

FIIT STU is persuaded about the necessity to present informatics, effort and results of our students to the general public, make an education point for them. For this purpose the faculty opened DIGIPOINT – a space for education in IT, presentations of new devices, debates about different subjects related to IT and the study at our faculty. DIGIPOINT was opened in October 2013 in a Polus shopping center in Bratislava and allowed us to communicate with different target groups.

5.3 Mobility programmes

FIIT STU is using the cooperation within the mobility programme LLP/Erasmus. In year 2013, this programme was contracted with these European universities (Erasmus code included):

- The University of Rousse – BG ROUSSE01
- Tallinn University of Technology – EE TALLINN04
- Ecole Pour l'Informatique et les Techniques Avancées – F BICETRE02
- Institut Catholique de Paris – F PARIS052
- Telecom SudParis – F EVRY01
- University of Zagreb – HR ZAGREB01

- Brandenburgische Technische Universität Cottbus – D COTTBUS01
- Hochschule für Telekommunikation Leipzig – D LEIPZIG10
- Jade University of Applied Sciences – D WILHELM02
- Technische Universität Darmstadt – D DARMSTA01
- University of Bergen – N BERGEN01
- Akademia Techniczno-Humanistyczna w Bielsku-Białej – PL BIELSKO02
- Univerza v Mariboru – SI MARIBOR01
- Universidad Politécnica de Madrid – E MADRID05
- Universitat Politècnica de Catalunya E BARCELO03
- Hogskolan Halmstad – S HALMSTA01
- Linnaeus university – S VAXJO03
- Budapest University of Technology and Economics – HU BUDAPES02
- Medimurje University of Applied Sciences of Cakovec – HL CAKOVEC01
- Istanbul Sehir University – TR ISTANBU33
- AGH University of Science and Technology – PL KRAKOW01
- Université de La Rochelle – F LAROCHE08
- KU Leuven Faculty of Engineering Science – B LEUVEN01

In 2014, 2 incoming Erasmus students have visited FIIT STU. In 2014, 7 students of our faculty were approved for Erasmus+ mobility abroad for various destinations.

Assoc. Prof. Ivan Kotuliak
Vice-Dean for Public Relations

Barbara Drnajová
Erasmus+ Coordinator

6 Faculty Services

6.1 Slovak Informatics Library

Academic Senate of the faculty approved on April 9, 2010 the incorporation of the Slovak Informatics Library in the organizational structure of the faculty as a faculty department. Dean subsequently established the Slovak Informatics Library using the certificate of incorporation with effect from May 1, 2010.

Slovak Informatics Library was established at the Faculty of Informatics and Information Technologies, Slovak Technical University in Bratislava in response to the faculty needs for research and training of experts in the field of informatics and information technologies for knowledge-based economy and for building an inclusive information society in Slovak Republic. The library is the central library to work with the scientific and professional literature in computer science and information technologies in the Slovak Republic. This library extends the scope of previous library at FIIT STU from faculty level to nationwide level.

Library:

- stores and registers qualification theses,
- is a workplace for central evidence of faculty publications and their references,
- provides acquisition services, books lending services and interlibrary loans,
- provides consultations and search services for teaching staff, researchers, all-time and external students of faculty and for other professional public.

The library catalogue contains more than 9 000 items, which are freely available in the Library. The catalogue can be found on <http://olib.cvt.stuba.sk>. The Library purchased and acquired thanks to donation 30 titles of professional journals in various languages (5 out of them are in Slovak). Journals are located in the Study Room.

Electronic services are available mainly through these databases: ACM Digital Library, IEEE/IET Electronic Library, Springer Link, Science Direct, Scopus, ISI Web of Knowledge, Wiley Online Library which are the part of a national project NISPEZ.

The Library cooperates with other faculty libraries of the Slovak Technical University, and with Slovak Centre of Scientific and Technical Information.

6.2 Computing and Communication Services

The Centre for Computing and Communication Services at the Faculty of Informatics and Information Technologies provides the following services for educational and research purposes at FIIT STU:

- functioning of the faculty central servers and services,
- functioning of the faculty system and network infrastructure,
- functioning of the faculty information systems,
- new servers, computers, printers, scanners etc. installation,
- operating systems and specialized software installation,
- upgrading and maintenance of computers,
- user support,
- services for faculty wire and wireless access points to the Internet,
- functioning of the camera security system,
- functioning of the IP telephony system,
- data-projectors installation.

The faculty computer network is based on a structured cable system and it is using 100 Mbps, 1 Gbps and 10 Gbps transfer speeds. It consists of approximately 200 personal computers and notebooks of the faculty staff and PhD. students, 250 personal computers and workstations in the education and research laboratories and 30 specialized servers.

The Centre for Computing and Communication Services also provides full service for educational computer laboratories and full or partial service for research laboratories of the faculty institutes.

Assoc. Prof. Tibor Krajčovič
Head of Centre for Computing and Communication Services

Lucia Falbová
Slovak Informatics Library

7 Institute of Applied Informatics

E-mail: uapi@fiit.stuba.sk
Web: <http://www.uapi.fiit.stuba.sk/>
Tel: +421 2 210 22 506
Fax: +421 2 654 20 587

The scientific and professional activities of the institute concentrate mainly on the specific areas of computational intelligence, computer graphics and vision, parallel and mobile computing and computer, network and internet security.

In computational intelligence our researchers specialize in heuristics used in evolutionary optimization, machine learning and in adaptation of neural networks, which is mostly applied in artificial life, social systems and cognitive science modeling and simulations.

Activities related to mobile computing and mobile application development concentrate on research of new methods and approaches to the design, development and implementation of mobile computing applications in various application domains, most notably in public transportation.

In the field of computer graphics and vision the research and development involves computer vision applications (object detection, object recognition), computer graphics, visualization of the data, new methods of human-computer interaction (augmented reality).

Activities related to security cover the methods for analyzing and modeling of security of network protocols, development of procedures for certificate based access control to resources in mobile ad-hoc network and procedures for computer system security level evaluation based on appropriate objective security metrics.

The institute is responsible for the following degree programme:

- Applied informatics (doctoral degree).

7.1 Staff

Director

Ladislav Hudec, Assoc. Professor

Deputy Director

Jiří Pospíchal, Professor

Administrative Department

Katarína Pribišová (till June 2014)

Tatiana Šipková (from July 2014)

Teaching Staff

Vanda Benešová, PhD.

Michal Čerňanský, Assoc. Professor

Peter Drahoš, PhD.

Miroslav Galbavý (till September 2014)

Ladislav Hudec, Assoc. Professor

Peter Kapec, PhD.

Vladimír Kvasnička, Professor

Matej Makula, PhD. (part time)

Jiří Pospíchal, Professor

Viliam Solčány, PhD. (part time)

Branislav Steinmüller (part time)

Juraj Štefanovič, PhD. (till July 2014)

Full time PhD Students

Ladislav Clementis

Andrej Fogelton

David Chalupa

Peter Jurík

Michal Kottman

Ján Kvak

Ján Laštinec

Peter Marko

Juraj Pálffy

Rastislav Szabó

Lukáš Turský

Peter Vilhan

7.2 Teaching**Undergraduate Study (Bc.)**

Course	Semester	Credits	Lecturer
Algebra and Discrete Mathematics	Autumn	6	V. Kvasnička, J. Pospíchal
Human-Computer Interaction	Spring	6	V. Benešová
IT Security Management	Spring	5	O. Strnád
Mathematical Logic I	Spring	6	V. Kvasnička
Operating Systems	Autumn	6	V. Solčány
Parallel Programming	Autumn	6	M. Čerňanský
Principles of Computer Graphics and Image Processing	Autumn	6	P. Drahoš
Basic Methods of Multimedial Con-	Autumn	6	P. Kapec

Course	Semester	Credits	Lecturer
tent Development			
Basic of Interactive Application Development	Spring	6	P. Drahoš
Modelling and Simulation	Spring	6	J. Štefanovič

Master Study (Ing.)

Course	Semester	Credits	Lecturer
Machine Learning	Autumn	6	J. Pospíchal
Evolutionary Algorithms	Spring	6	J. Pospíchal
Neural Networks	Autumn	6	M. Čerňanský
Computer Vision	Spring	6	V. Benešová
Image Processing, Graphics and Multimedia	Autumn	6	V. Benešová
Security of Computer Systems	Autumn	6	L. Hudec
Security in Internet	Spring	6	L. Hudec
Advanced Methods of Computer Graphics	Autumn	6	P. Drahoš
Data Visualisation	Spring	6	P. Kapec

7.3 Theses

Bachelor (Bc.) Theses – graduates 2014

Study Programme Computer and Communication Systems and Networks

- Buocik, Martin: *How to Teach Computer a Tic-tac-toe*. Supervisor: J. Pospíchal
- Morvay, Tomáš: *SQL Attack Detection System*. Supervisor: R. Szabó
- Prochotská, Veronika: *System for Support of Visualisation of Software*. Supervisor: P. Kapec
- Uherek, Peter: *Detection of Attack into Operating System Users' Accounts with Support from Security Metrics*. Supervisor: P. Jurík

Study Programme Informatics

- Brisuda, Rudolf: *Tones Recognition for Displaying Interactive Music Sheets on Mobile Devices*. Supervisor: A. Fogelton
- Černák, Marek: *Heuristic Clustering in the Social Networks*. Supervisor: D. Chalupa
- Číž, Martin: *Searching Possible Uses of E-learning Tools for the Process of Preparing, Creating and Editing Timetables*. Supervisor: M. Galbavý
- Drutarovský, Tomáš: *Driver's Microsleep Detecion*. Supervisor: A. Fogelton

- Duranský, Marek: *Interactive Graph Visualization in Three-dimensional Space*. Supervisor: P. Kapec
- Filípek, Peter: *Approximation of Boolean Functions by Using Symbolic Regression and Genetic Programming*. Supervisor: L. Clementis
- Gajdoš, Michal: *Support of the Creation of Electronic Timetables for Public Transport*. Supervisor: M. Čerňanský
- Jurík, Igor: *Verify the Possibilities of Using Learning Support Tools for Preparation, Creation and Modification of Timetables*. Supervisor: M. Galbavý
- Kačurík, Tomáš: *Measurement of Surface Roughness Using Kinect Sensor*. Supervisor: V. Benešová
- Kaššay, Martin: *Image Segmentation with the Support Calculation on the Graphics Processing Unit*. Supervisor: V. Benešová
- Kučera, Michal: *Virtual Presentation of Place*. Supervisor: J. Štefanovič
- Kušnír, Peter: *Image Recognition during Virtual Game*. Supervisor: J. Štefanovič
- Mendel, Peter: *Source Code Documentation Processing*. Supervisor: P. Kapec
- Olešová, Veronika: *Generating a Saliency Map*. Supervisor: V. Benešová
- Pikuliak, Matúš: *Evolutionary-algorithmic Synthesis of Musical Elements*. Supervisor: D. Chalupa
- Polko, Michal: *Light Field Rendering in Web Browsers*. Supervisor: P. Drahoš
- Pribul, Daniel: *Automated Evaluation of The Quality of Software Packages*. Supervisor: P. Drahoš
- Rybár, Metod: *Evolutionary Solution of the Game Mastermind*. Supervisor: J. Pospíchal
- Šoltés, Filip: *Evolutionary-algorithmic Synthesis of Music Elements*. Supervisor: D. Chalupa
- Šulek, Marek: *A System to Support Software Visualization*. Supervisor: P. Kapec
- Šutarík, Peter: *Application of Augmented Reality on Mobile Device*. Supervisor: V. Benešová
- Valovič, Michal: *Management of Binary Software Modules and their Dependencies*. Supervisor: P. Drahoš
- Viskup, Michal: *Image Segmentation Using Computation Support of Graphics Processing Unit*. Supervisor: V. Benešová
- Volovár, Martin: *Interactive Display of Graphs in Three Dimensions*. Supervisor: P. Kapec
- Wolf, Miroslav: *Evolutionary Clustering of Small Networks*. Supervisor: J. Pospíchal
- Železnák, Andrej: *Optical Music Recognition*. Supervisor: V. Benešová

Master (Ing.) Theses – Graduates 2014*Study Programme Information Systems*

- Antala, Ján: *Adaptive Web Design*. Supervisor: M. Čerňanský
- Čertek, Martin: *Interactive Presentation of Place*. Supervisor: J. Štefanovič
- Dupal', Martin: *Support in Schedule Creation in Multi-agent Environment*. Supervisor: M. Galbavý
- Gomola, Matej: *Expert System for Risk Management*. Supervisor: M. Galbavý
- Michalec, Peter: *Coordination and Cooperation of Mobile Agents*. Supervisor: I. Budinská
- Mikuda, Šimon: *Component for Editing Text with Graphical Enhancements*. Supervisor: P. Drahoš
- Mydla, Ludovít: *Analysis of Speech Disfluencies*. Supervisor: J. Pálffy
- Neslušánová, Lenka: *Human on Scene with Augmented Reality*. Supervisor: J. Štefanovič
- Ružička, Pavol: *Active Learning Support Vector Machines to Detect Dysfluencies of Non-Fluent Speech*. Supervisor: J. Pálffy
- Škvarenina, Pavol: *Solving Timetable Problem as Distributed Fuzzy Constraint Satisfaction Problem in Multi-agent System*. Supervisor: M. Galbavý
- Zimová, Zuzana: *A Solution of Sudoku Puzzle by an Approach Based on a Binary System of Linear Equations*. Supervisor: V. Kvasnička

Study Programme Computer and Communication Systems and Networks

- Filipek, Jozef: *Security in Mobile Ad-hoc Network*. Supervisor: L. Hudec
- Števko, Adam: *Securing the Last Mile of DNS with DNSSEC*. Supervisor: L. Hudec

Study Programme Software Engineering

- Blšták, Miroslav: *Media Improvement by Interactive Evolutionary Algorithms*. Supervisor: J. Pospíchal
- Branišová, Jana: *Anomaly Detection from Log Files Using Data Mining*. Supervisor: J. Breier
- Britvík, Andrej: *Graph Clustering Visualization Using Spatial Figures*. Supervisor: P. Kapec
- Filčák, Tomáš: *Extraction of Software Artifacts for Visualization*. Supervisor: P. Kapec
- Geier, Martin: *Automatic Annotation of Semantic Description of the Scene in the Image*. Supervisor: V. Benešová
- Gondár, Jakub: *Automatic Annotation of Object Contours in Images and Videos Based on MPEG7 Standard*. Supervisor: V. Benešová
- Jašš, František: *Innovative VPN Client for Mobile Devices*. Supervisor: P. Vilhan

- Kunka, Tomáš: *Object Recognition Using Local Feature-based Methods*. Supervisor: V. Benešová
- Kuzmík, Ondrej: *Acceleration of the Traveling Salesman Problem Using Evolutionary Algorithms and Collective Memory*. Supervisor: V. Kvasnička
- Lihocký, Michal: *Extracting Information from Board Game Using Computer Vision*. Supervisor: J. Štefanovič
- Nagy, František: *The Use of Metrics with Visualisation of Software Systems in 3D Space*. Supervisor: P. Kapec
- Ort, Miroslav: *Evolutionary Algorithm to Solve the Rubik's Cube*. Supervisor: J. Pospíchal
- Ošvát, Michal: *Object Detection and Segmentation Using Contours*. Supervisor: A. Fogelton
- Pakan, Filip: *Evolutionary Generation of Error-correcting Codes*. Supervisor: J. Pospíchal
- Račev, Marek: *Computer Visual Object Recognition*. Supervisor: V. Benešová
- Rešetár, Jozef: *3D Printing of Simple Mechanical Objects*. Supervisor: P. Drahoš
- Slotík, Igor: *Using the Methods of Artificial Intelligence in Network Detection Mechanisms*. Supervisor: L. Hudec
- Tomčo, Marek: *Simulation of Realistic Global Illumination in Real Time*. Supervisor: P. Drahoš
- Trebuľa, Ján: *3D Scene Reconstruction Using Visual Inputs*. Supervisor: M. Kottman
- Uhrin, Martin: *Data Mining for Security Purposes*. Supervisor: J. Breier

Doctoral (PhD.) Theses

Student name: David Chalupa

Degree program: Applied Informatics

Thesis title: *Partitioning Networks into Cliques: A Randomized Heuristic Approach*

Supervisor: Jiří Pospíchal, Professor

Defended on: June 6, 2014

Annotation: Partitioning of networks into cliques is an interesting current problem, motivated by the rise of popularity of social networks and their community structure. The aim of the (vertex) clique covering problem (CCP) is to partition the vertices of a network into the minimum number of groups, such that within each of these groups called cliques, all pairs of vertices are adjacent. In this dissertation, we present an order-based representation for CCP based on a greedy clique covering (GCC) algorithm. Additionally, we propose a highly efficient iterated greedy (IG) algorithm for CCP in social and other complex networks, which uses this representation. IG combines the ideas from the areas of classical and stochastic algorithms, which leads to a favorable tradeoff between scalability and quality of results. For the order-based representation, GCC and IG, we present extensive empirical and ana-

lytical results, which show that IG is particularly well-suited for large sparse graphs. In the presented experiments, IG outperforms the well-known Brélaz's graph coloring heuristic in terms of solution quality. Additionally, IG is shown to provide optimal or at least near-optimal results for a diverse set of real-world networks we acquired over time. First rigorous theoretical results for the approach are also proven. Sufficient condition for an improvement of solution by IG is formulated. It is shown that IG finds the optimal solution on path graphs in polynomial time. Worst-case performance is analyzed as well.

Student name: Juraj Pálffy
Degree program: Applied Informatics
Thesis title: *Analysis of Dysfluencies by Computational Intelligence*
Supervisor: Jiří Pospíchal, Professor
Defended on: June 25, 2014
Annotation: The work presents a contemporary perspective of the field of dysfluent speech processing. It deals with suitable approaches of computational intelligence to consider for speech analysis. It presents computational intelligence classifiers, based on probabilistic decision theory and classifiers based on cost function optimization. It selects the symptoms that are the subject of interest and describes the state-of-the-art of computer analysis in stuttered speech. In experiments it deals with Artificial Neural Networks and with Support Vector Machines, to solve the task of recognizing simple dysfluencies. In data mining and in bioinformatics looks for inspiration, to handle the problem of detecting complex dysfluent events. The proposed new methodology for processing long dysfluent speech intervals is based on the speech signal transformation into symbolic sequences. It presents new algorithms, able to detect complex dysfluencies. Moreover it derives new features of dysfluencies from the outputs of new algorithms. It borrows functions from the field of video sequence analysis to be applied and to help derive new functions designed to detect specific dysfluent events. The new methodology for symbolic analysis of dysfluent speech, the new features of complex dysfluencies and the new algorithms were related to previous methodologies and statistically compared.

Student name: Peter Vilhan
Degree program: Applied Informatics
Thesis title: *Secure Access Control in Distributed Environment*
Supervisor: Ladislav Hudec, Assoc. Professor
Defended on: July 17, 2014
Annotation: The main goal of this work is to develop a new approach for the secure access control in conditions of MANET networks with utilization of public key infrastructure. We have analyzed several existing concepts of public key infrastructure deployments. This paper presents the designed concept to improve the public key infrastructure deployability in the mobile ad-hoc networks. To meet our objectives, we have modified the B.A.T.M.A.N. Advanced routing protocol, determined

several levels of node's trustworthiness and introduced the concept of cross certificates, together with the computation formula for the optimal amount of cross certificates issued by the trusted authority. To further improve the service reachability in highly mobile networks in earlier stages of PKI deployment, we have designed the ClusterGlue. The ClusterGlue helps to connect groups of nodes from different parts of network which owns the certificates issued by the same authority.

7.4 IIT.SRC Students' Papers

Full papers

- Brisuda, Rudolf: *Transcription of Piano Music*. Supervisor: A. Fogelton
- Drutarovský, Tomáš: *Eye-blink Detection Using Gradient Orientations*. Supervisor: A. Fogelton
- Filípek, Jozef: *Security in Mobile Ad Hoc Networks*. Supervisor: L. Hudec
- Filípek, Peter: *Tree Structure Design of Boolean Expressions for Purpose of Genetic Programming*. Supervisor: L. Clementis
- Kunka, Tomáš: *Object Recognition Using Superpixels and Feature-Based Methods*. Supervisor: V. Benešová
- Laštinec, Ján: *Estimation of Lithium Cell State-of-Health Using Fuzzy Logic*. Supervisor: L. Hudec
- Lihocký, Michal: *Evaluating the State of the Board Game from a Still Image*. Supervisor: J. Štefanovič
- Olešová, Veronika: *Generating a Saliency Map Using Superpixels*. Supervisor: V. Benešová
- Ort, Miroslav: *Evolutionary Algorithm to Solve Rubik's Cube*. Supervisor: J. Pospíchal
- Pakan, Filip: *Evolutionary Generation of Error-correcting Codes*. Supervisor: J. Pospíchal
- Pikuliak, Matúš: *Interactive Evolutionary Music Composing*. Supervisor: D. Chalupa
- Polko, Michal: *Light Field Rendering in Web Browsers*. Supervisor: P. Drahoš
- Ružička, Pavol: *Active Learning Support Vector Machines to Detect Dysfluencies of Non-Fluent Speech*. Supervisor: J. Pálfy
- Rybár, Metod: *Evolutionary Solution of the Game Mastermind*. Supervisor: J. Pospíchal

Extended abstracts

- Antala, Ján: *Beyond Adaptive Web Design*. Supervisor: M. Čerňanský
- Geier, Martin: *Object Recognition Based on a Description of the Superpixels Neighborhood*. Supervisor: V. Benešová
- Kuruc, Marián: *Hand Gesture-based Language and its Application in a Game*. Supervisor: J. Štefanovič

- Mikuda, Šimon: *Component for Editing Text with Graphical Enhancements*. Supervisor: P. Drahoš
- Števko, Adam: *Securing the Last Mile of DNS with DNSSEC*. Supervisor: L. Hudec

TP CUP Competition

- Dogandžić, Duško – Durčák, Dávid – Handzuš, Ján – Hlaváč, Patrik – Jakab, Marek – Marcoňák, Matej – Soós, Daniel – Trégerová, Martina: *Data Visualisation in Augmented Reality*. Supervisor: P. Kapec
- Polatsek, Patrik – Petluš, Martin – Mercz, Jakub – Sekerák, Lukáš – Hamar, Peter – Sabol, Róbert: *Carlos - Car Entertainment System*. Supervisor: V. Benešová

7.5 Research Laboratories

Mobile Computing Laboratory

Manager: M. Čerňanský (UAPI), I. Kotuliak (UPSS), V. Vranić (UISI)
Contact: michal.cernansky@stuba.sk
Description: The main purpose of the laboratory is to support research and teaching process related to mobile computing. Laboratory supports research and student projects from multiple domains that can greatly benefit from mobile computing technology such as computer vision, computer graphics, machine learning and augmented reality. Currently the laboratory equipment consists of several iOS mobile phone and tablet PC devices (Apple iPhone, Apple iPad) and computers used for development applications for mobile devices. In near future laboratory will be equipped with devices running Android (Google), Symbian OS (Nokia) and eventually other major mobile computing platforms (Windows Phone 7, RIM Blackberry, Samsung Bada).

Grid Computing Laboratory

Manager: L. Hudec
Contact: ladislav.hudec@stuba.sk
Description: The research and teaching laboratory is devoted to teaching distributed processing and parallel programming graduate modules and experimental lab for project on Grid Computing and its components. Grid consists of two independent parts. The first part is testing grid equipped 20 CPUs, 1Gb network interconnection, front-end server with UPS, Globus Toolkit software and VMWare software. The second part is production grid equipped 40 CPUs, 1Gb network connection, front-end server with UPS, Globus Toolkit software and VMWare software. Grid is connected to Internet and is going to be as a part of SlovakGrid national grid structure.

Laboratory of Computer Vision and Graphics

Manager: V. Benešová
Contact: benesova@fiit.stuba.sk
Web: vgg@fiit.stuba.sk
Description: Laboratory of computer vision and graphics serves for the teaching as well as for the research. Students and team work projects activities

cover the field of computer vision, computer graphics, virtual reality, augmented reality and new methods of Human-Computer Interaction. The laboratory provides the facility for the research of Augmented reality systems using a large-sized transparent projection foils, multiple projectors, four Kinect sensors, and cameras such as power-full PC with NVIDIA GPU.

7.6 Research Projects

Security in Distributed Computer Systems and Mobile Computer Networks (VEGA, 1/0722/12)

Project leader: L. Hudec

Members UAPI: D. Bernát, P. Čičák, J. Flochová, M. Galbavý, P. Jurík, J. Kvak, J. Laštinec, P. Marko, V. Solčány, R. Szabo, P. Vilhan

Supported by: Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences

Duration: January 2012 – December 2014

Description: Project deals with new methods and tools development for security in distributed computer systems and mobile computer networks. Distributed system is presented by computing nodes interconnected by computer network. The project solves the methods for analyze and modeling of network protocols in order to discover the security weaknesses of protocol and possibility to use those protocols models in effective check of network traffic. Further the project solves the new methods development to override a covert communication in distributed systems throughout network protocols. The mobile computer network is presented by wireless mobile ad-hoc network. The project solves new procedures development based on certificates in access control to resources of mobile ad-hoc network. Further the project solves the development of new procedure for computer system security level evaluation by introducing appropriate objective security metrics.

Extension of Theory of Multi-agent Systems by Collective Memory (VEGA 1/0458/13)

Project leader: V. Kvasnička

Members UAPI: L. Clementis, D. Chalupa, J. Pálfy, J. Pospíchal

Supported by: Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences

Duration: January 2013 – December 2015

Description: The goal of the proposed project is an extension of a standard theory of multiagent systems by a notion of collective memory, which serves as an important acceleration factor of adaptation of multiagent systems. The principle of collective memory approach was adopted from social sciences, where Halwachs idea of collective serves as an important part of explanation of cohesion of social groups. One can state, that multiagent approach towards presentation of collective memory creates an important innovative element in explanation of its importance. The presented approach is an original first attempt for appli-

cation of artificial intelligence in social science for a construction of a theoretic model of collective memory of Halbwachsian type.

New Methods of Reinforcement Learning for Cooperative Multiagent Systems (VEGA 1/0553/12)

Project leader: J. Pospíchal
Members UAPI: L. Clementis, A. Fogelton, D. Chalupa, J. Pálffy, L. Turský
Supported by: Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences
Duration: January 2012 – December 2014
Description: The goal of the proposed project is the development and application of new methods of reinforcement learning. As a new element in this learning, we will include the enhanced possibility of cooperation between agents, which should substantially increase the applicability of learning compared to the classical methods of reinforcement learning. The inclusion of cooperation in the reinforcement learning represents an important element of innovation that will extend opportunities for learning in multiagent systems towards emergence of division of labor, which should significantly increase the resulting effectiveness of agents.

Informačný a zábavný systém pre spolucestujúcich v automobile s použitím nových metód interakcie, obohatenej reality a mobilných technológií (VW 89/13)

Project leader: V. Benešová
Supported by: Volkswagen Slovakia Foundation
Duration: June 2013 – September 2014
Description: The challenge of this project was a development of an augmented reality (AR) interactive system in the car, which used on the input not only the information about the GPS position of the car, but also interprets a visual information of the surrounding real world taken by a camera. The side window of the car will then serve as a transparent projection screen by using of a transparent projection foil on the car window. Hence, the real world will be augmented by a projected virtual visual elements (text or graphics) for a educational or entertainment purposes

7.7 Publications

Journals

- HORKOVIČOVÁ, K - FURDOVÁ, A. - KRČOVÁ, I. - FOGELTON, A.: Blinking Rate Correlated with the Tear Film State of the Patient with Dry Eye Syndrome. In: *Healthcare and Social Work*. Vol. 9, No. 1 (2014), ISSN 1336-9326. p. 53-64. (in Slovak, English)
- KVASNIČKA, V. - POSPÍCHAL, J.: A Study of Replicators and Hypercycles by Hofstadter's Typogenetics. In: *INSPEC 2013*. International Journal of Signs and Semiotic Systems. Vol. 3, Iss. 1 (2014), ISSN 2155-5028. p. 10-26.

International Conferences

- CLEMENTIS, L.: Advantage of Parallel Simulated Annealing Optimization by Solving Sudoku Puzzle. In: *Emergent Trends in Robotics and Intelligent Systems: Where is the Role of Intelligent Technologies in the Next Generation of Robots?*. Cham : Springer, 2014. pp. 207-213.
- CLEMENTIS, L.: Global and Local Environment State Information as Neural Network Input by Solving the Battleship Game. In: *Nostradamus 2014. Prediction, Modeling and Analysis of Complex Systems*. Cham : Springer, 2014. pp. 291-300.
- CHALUPA, D. - POSPÍCHAL, J.: On the Growth of Large Independent Sets in Scale-Free Networks. In: *Nostradamus 2014. Prediction, Modeling and Analysis of Complex Systems*. Cham : Springer, 2014. pp. 251-260.
- LAŠTINEC, J. - HUDEC, L.: Approach to Securing In-vehicle Communication Using Ethernet/IP. In: 10th Annual International Joint Conferences on Computer, Information, Systems Sciences, & Engineering. CISSE Online E-Conference. December 12-14, 2014. University of Bridgeport, UK. Proceeding in printing.
- VILHAN, P. - HUDEC, L.: Cluster Glue - Improving Service Reachability in PKI Enabled MANET. In: *Uksim-AMSS 2014. Proceedings Uksim-AMSS 16th International Conference on Computer Modelling and Simulation*. Cambridge, United Kingdom. Los Alamitos : IEEE Computer Society, 2014. pp. 493-498.

Selected Local and National Conferences

- CLEMENTIS, L.: Study of Game Emergency Strategy by Neural Networks. In: *Cognition and Artificial Life II*. Silesian University in Opava, Czech Republic 2014, pp. 39-44. (in Slovak)

Books

- ŠIKUDO VÁ, E. - ČERNEKOVÁ, Z. - BENEŠOVÁ, V. - HALADOVÁ, Z. - KUČEROVÁ, J.: *Computer Vision and Object Detection and Recognition*. 1st ed. Praha : Wikina, 2014. ISBN 978-80-87925-06-5, 378 p. (in Slovak)

7.8 Cooperation

Cooperation in Slovakia

- Faculty of Mathematics, Physics and Informatics, Comenius University Bratislava
- Faculty of Electrical Engineering, Technical University of Košice
- Ministry of Economy of the Slovak Republic
- Alfa Base Ltd., Bratislava
- Kybernetika Ltd., Košice
- Research Institute of Nuclear Power Engineering Inc., Trnava
- Schneider Electric Slovakia Ltd.
- Start Automation Ltd., Malacky
- Termoreg Ltd., Bratislava
- ui42, Bratislava

International Cooperation

- University of Zagreb, Croatia
- Institute of Software Technology and Interactive Systems, Vienna University of Technology, Austria
- Institute Supérieur d'Electronique de Paris (I.S.E.P.), Paris, France
- Institute Central European Initiative in Cognitive Science Education (joining universities in Vienna, Budapest, Zagreb and Bratislava)
- Faculty of Philosophy and Science, Silesian University in Opava
- Faculty of Informatics, Humboldt University in Berlin
- Rockwell Automation – Allen Bradley, USA
- Schneider Electric Deutschland, Germany
- Brno University of Technology, Czech Republic
- Technical University of Liberec, Czech Republic
- Technical University of Ostrava, Czech Republic
- Morgan Stanley Hungary

Visits of Staff Members

- *P. Vilhan*: UKSim-AMSS 2014, 16th International Conference on Computer Modelling and Simulation, Cambridge, United Kingdom, March 25-29, 2014
- *L. Clementis*: Cognition and Artificial Life XIV, Zaječí, Czech Republic, May 26-30, 2014
- *A. Fogelton*: Vienna, Austria, May 26, 2014
- *V. Benešová*: Prague, Czech Republic, August 13-16, 2014
- *J. Pospíchal*: Nostradamus 2014: Prediction, Modeling and Analysis of Complex Systems Systems, Ostrava, Czech Republic, June 23-24, 2014
- *J. Pospíchal*: Mendel 2014, 20th International Conference on Soft Computing, Brno, Czech Republic, June 25-30, 2014
- *A. Fogelton*: ECCV 2014. European Conference on Computer Vision, Zürich, Switzerland, September 7-13, 2014
- *A. Fogelton*: Prague, Czech Republic, October 15-17, 2014
- *J. Pospíchal*: Brno University of Technology, Czech Republic, November 12, 2014

7.9 Membership in Professional Organisations and Societies

Slovak Professional Organisations and Societies

The whole institute is a collective member of Slovak Artificial Intelligence Society.

Vanda Benešová

- ACM, Association for Computing Machinery (member, since 2013)
- IEEE, Institute of Electrical and Electronic Engineers (member, since 2013)

Ladislav Hudec

- Slovak Association for Information Security (member, since 1996; president since 1998, vice-president, since 2006)
- Slovak Chapter of the ISACA (member, since 2002)

Vladimír Kvasnička

- Slovak Academic Society (founding member, since 1997)
- Slovak Artificial Intelligence Society (chairman, since 2000)
- Slovak Computer Science Society (member, since 1996)

Jiří Pospíchal

- Slovak Artificial Intelligence Society (member, since 2000)
- Slovak Computer Science Society (member, since 1996)

International Professional Organisations and Societies*Michal Čerňanský*

- INNS, International Neural Network Society (member, since 2006)

Ladislav Hudec

- Information Systems Audit and Control Association (member, since 1998)

Jiří Pospíchal

- EUROFUSE, EURO Working group on fuzzy sets (member, since 2007)

Viliam Solčány

- ACM, Association for Computing Machinery (member, since 2004)

7.10 Other Activities

- Artificial Intelligence Seminar – V. Kvasnička (organizer)
www.fiit.stuba.sk/~kvasnicka/Seminar_of_AI
- Journal of Computing and Information Technology – V. Kvasnička (since 2005): members of advisory board
- Information Sciences and Computing – V. Kvasnička, editor
- Journal of Electrical Engineering – L. Hudec, editor
- MATCH Communications in Mathematical Chemistry – V. Kvasnička (since 1998): member of advisory board
- Neural Network World – V. Kvasnička (since 2001): member of advisory board
- Croatica Chimica Acta - V. Kvasnička (since 2002): member of advisory board
- CompSysTech'14, 15th International Conference on Computer Systems and Technologies, June 27-28, 2014, Ruse, Bulgaria – L. Hudec: member of programme committee
- Computing and Informatics (CAI) – V. Kvasnička, J. Pospíchal: members of editorial board
- InTech - Intelligent Technologies 2014, September 11-13, 2014, Poprad – J. Pospíchal: member of programme
- MENDEL '14, 20th International Conference on Soft Computing, June 25-27, Brno, Czech Republic – J. Pospíchal: member of programme

-
- Inter. Conf. on Soft Computing Models in Industrial and Environmental Applications, Bilbao, 2014 – J. Pospíchal: member of programme committee
 - Nostradamus conference, VSB Technical University of Ostrava, Czech Republic, June 23-25, 2014 – J. Pospíchal: member of programme committee
 - IEEE 12th International Symposium on Applied Machine Intelligence and Informatics, SAMI 2014, January 23-25, 2014, Herl'any, Slovakia – V. Kvasnička: member of programme committee
 - Organisation of regular scientific seminar on Vision and Computer Graphics (at FIIT STU) – organiser V. Benešová

8 Institute of Computer Systems and Networks

E-mail: upss@fiit.stuba.sk
Web: <http://www.upss.fiit.stuba.sk/>
Tel: + 421 2 210 22 506
Fax: + 421 2 654 20 587

The Institute of Computer Systems and Networks offers undergraduate and graduate study programmes covering a broad range of courses in *Computer Engineering*. Our courses are built on sound theoretical fundamentals and are oriented towards developing independent creative thinking and ability to design solutions or to solve complex problems in the field of engineering expertise.

These courses cover basics and principles of mathematics, physics, basics of computing and programming, and concentrate mostly on the following domains: computer architecture, distributed systems and computer networks, design of digital systems, embedded systems.

The institute is responsible for education in the accredited degree programmes at two levels of university education:

- Computer and Communication Systems and Networks (bachelor degree),
- Computer and Communication Systems and Networks (master degree).

The institute has been active and successful in research and reflects in research the current development of computer engineering in the world. The dominant research interests of the institute include:

- design of digital systems and embedded systems, computer networks,
- creation of a novel effective formal specification tools, identification and implementation of automated engineering tasks in the area of HW/SW co-design of the mobile computing systems,
- development of new algorithms and methodology for providing reliability and fault tolerance,
- development of new approaches and methods for security enforcement in distributed systems, and
- elaboration of new methodology for VLSI system design and testing at the functional level that is applicable for integrating into ASIC and PLD design.

8.1 Staff

Director

Katarína Jelemenská, PhD.

Deputy Director

Elena Gramatová, Assoc. Professor

Tomáš Kováčik, PhD.

Administrative Department

Alena Grúberová (till January 2014)

Tatiana Šípková (since January 2014)

Teaching Staff

Pavel Čičák, Assoc. Professor

Boris Dado (till June 2014)

Barbara Drnajová

Jana Flochová, PhD. (till May 2014)

Elena Gramatová, Assoc. Professor

Pavol Horváth, Professor (part time, till August 2014)

Martin Hrubý, PhD. (part time, till June 2014)

Ján Hudec

Katarína Jelemenská, PhD.

Margaréta Kotočová, Assoc. Professor (part time, since September 2014)

Ivan Kotuliak, Assoc. Professor

Tomáš Kováčik, PhD.

Tibor Krajčovič, Assoc. Professor

Peter Magula, PhD. (part time, till May 2014)

Michal Olšovský, PhD. (part time, till June 2014)

Peter Pišteň, PhD. (part time, since September 2014)

Elena Tomalová (part time, till May 2014)

Peter Trúchly, PhD.

Researchers

Dušan Bernát

External Lecturers

Martin Čechvala

Jakub Obetko

Matúš Turcsány, PhD.

Other Staff

Jana Flochová, PhD. (part time, since June 2014)

Full time PhD Students

Jaroslav Abaffy (till January 2014)

Ján Balažia

Rastislav Bencel (since September 2014)

Andrej Binder

Roman Broniš

Maroš Ďuríček

Tomáš Halagan
 Pavol Helebrandt
 Ivana Hucková (since September 2014)
 Peter Jombík
 Matej Jurikovič (till January 2014)
 Štefan Krištofík
 František Kudlačák
 Dominik Macko
 Ján Murányi
 Martin Nagy
 Ondrej Perešíni (since September 2014)
 Peter Pištek (till August 2014)
 Richard Roštecký (since September 2014)
 Miroslav Siebert
 Juraj Šubín (since September 2014)
 Viktor Šulák (since September 2014)
 Martin Vojtko

8.2 Teaching

Undergraduate Study (Bc.)

Course	Semester	Credits	Lecturer
Computer Engineering Principles	Autumn	6	K. Jelemenská
Computer Application Design	Spring	6	P. Čičák
Computers Architectures	Spring	6	T. Krajčovič
Computer and Communication Networks	Spring	6	M. Kotočová
Convergence of Mobile and Wired Networks	Autumn	6	I. Kotuliak
Digital Systems Description	Autumn	6	K. Jelemenská
Final Bachelor Project I-II	Autumn Spring	3-9	P. Čičák
Introduction to Computer Systems	Spring	6	T. Kováčik
Logic Circuits	Autumn	6	J. Hudec
Machine Level Programming	Spring	6	P. Čičák
Microcomputers	Spring	7	T. Krajčovič
Principles of Communication Systems	Autumn	6	P. Trúchly
Switching and routing in IP networks	Autumn	6	M. Čechvala, J. Obetko
WAN Technologies	Spring	6	M. Hrubý
Diagnostics of Digital Systems	Spring	6	E. Gramatová
English language	Autumn	4	B. Drnajová

Master Study (Ing.)

Course	Semester	Credits	Lecturer
Architecture of Computer Systems	Autumn	6	D. Bernát
Communication Services and Networks	Autumn	6	P. Trúchly
Computing Systems Research	Autumn	2	E. Gramatová
Digital Systems Design	Spring	6	K. Jelemenská
Digital Systems Testing and Reliability	Autumn	6	E. Gramatová
Diploma Project I-III (Computer and Communication Systems and Networks)	Autumn Spring	8-12-20	P. Čičák
Embedded Systems	Autumn	6	T. Krajčovič
NGN Networks, Services and Protocols	Spring	6	I. Kotuliak
Satellite Systems	Spring	6	P. Trúchly
Systems on Chip Design	Autumn	6	V. Stopjaková
Team Project I-II (Computer and Communication Systems and Networks)	Autumn Spring	7-5	J. Hudec
Wireless Communication Systems	Autumn	6	I. Kotuliak

8.3 Theses**Bachelor (Bc.) Theses – graduates 2014***Study Programme Computer and Communication Systems and Networks*

- Autner, Frederik: *Application for Selected Funtoro Device*. Supervisor: P. Pištek
- Bacigál, Lukáš: *Graphical Model of Faults in Memories*. Supervisor: Š. Krištofik
- Báňai, Dávid: *Hardware Module for Communication Control Resistant to Failures*. Supervisor: M. Ďuriček
- Cekovský, Roman: *Mailbox Access System Based on NFC Technology*. Supervisor: M. Baláž
- Cút, Jaroslav: *Monitoring Network Utilization*. Supervisor: M. Olšovský
- Dikant, Patrik: *HbbTV Application for SmartEDU Service*. Supervisor: R. Broniš
- Ferenc, Matej: *Intelligent RFID/NFC System for School Attendance*. Supervisor: M. Baláž
- Fránik, Milan: *Network Availability Monitoring*. Supervisor: M. Olšovský
- Fülöp, Pavol: *Monitoring Process Resources Usage*. Supervisor: D. Bernát
- Galinski, Marek: *SIP Single Port Architecture Extension*. Supervisor: J. Murányi
- Grznár, Michal: *Composing Mobile Network from Open Source Components*. Supervisor: I. Kotuliak
- Hošková, Dominika: *Control Program of Micro-in-circuit Emulator*. Supervisor: T. Krajčovič
- Kobza, Ladislav: *Migration of a Modular Operating System to a Selected Platform*. Supervisor: M. Vojtko

- Kristel, Patrik: *Creation of WEB Client for a VoIP Communication*. Supervisor: I. Kotuliak
- Kunštár, Vladimír: *Control Unit with 1-wire Protocol*. Supervisor: M. Baláž
- Lipovský, Marek: *Verification of Path Testability in Digital Circuits*. Supervisor: M. Siebert
- Matejov, Erik: *E-mail Client Extension*. Supervisor: R. Broniš
- Ostrovský, Alex: *Reduction of Binary Decision Diagrams*. Supervisor: P. Pištek
- Paľove, Stanislav: *Digital System Power Estimation Based on SystemC Model*. Supervisor: D. Macko
- Petřík, Tomáš: *Application for mobile platform*. Supervisor: P. Trúchly
- Podoláček, Lukáš: *The Performance of the Protocols that Ensure Redundancy*. Supervisor: M. Olšovský
- Prágai, Albert: *Functional Test Generation for Processors*. Supervisor: J. Hudec
- Protuš, Peter: *Calculation of Statistics of Covering Defects in Digital System*. Supervisor: M. Siebert
- Repka, Róbert: *Virtual Private Networks*. Supervisor: M. Kotočová
- Siro, Miroslav: *Security of Openflow Protocol*. Supervisor: P. Helebrandt
- Sovič, Roman: *Processing of Long-term Measurements of Selected Characteristics of the Internet*. Supervisor: D. Bernát
- Spurný, Marek: *Graphic Simulator Reconfiguration of Embedded Memories*. Supervisor: Š. Křištofik
- Švarc, Ján: *Covert Channels in Computer and Communication Networks*. Supervisor: P. Magula
- Švoňavský, Matej: *Generator of Processor Initialization Program*. Supervisor: M. Vojtko
- Tamáši, Róbert: *Graphical Fault Model in Memories*. Supervisor: Š. Křištofik
- Tauber, Henrich: *Properties of Networks Based on Openflow Protocol*. Supervisor: P. Helebrandt
- Tkáč, Samuel: *Equivalence Checking of Hardware Designs Using Mathematical Logic*. Supervisor: D. Macko
- Trybulová, Natália: *Mobile Application which is Aware of its Consumption*. Supervisor: M. Tvarožková
- Valiček, Michal: *Concurrent Processes Implementation in Embedded Systems*. Supervisor: T. Krajčovič
- Vaško, Ondrej: *Processing of Long-term Measurements of Selected Characteristics of the Internet*. Supervisor: D. Bernát
- Vranec, Peter: *Protocol TCP in Wireless Systems*. Supervisor: P. Trúchly
- Závacký, Marek: *Innovative Application for Hybrid Television*. Supervisor: T. Kováčik
- Žalman, Boris: *Program Flow Graph Visualization*. Supervisor: M. Ďuriček

Master (Ing.) Theses – Graduates 2014*Study Programme Computer and Communication Systems and Networks*

- Bencel, Rastislav: *Content Sharing between Hybrid Television and Mobile Device*. Supervisor: R. Broniš
- Bešina, Ivan: *Web Application for Generating Graphs of Functions*. Supervisor: D. Bernát
- Bôžik, Peter: *Mobile Application for Secure Decentralized Communication in WLAN Network for Android Operating System*. Supervisor: T. Nečas
- Čechvala, Martin: *Optimization of Data Flow in Networks with High Redundancy*. Supervisor: M. Hrubý
- Harvanová, Valéria: *Monitoring System for Smart Household*. Supervisor: T. Krajčovič
- Hucková, Ivana: *Optimization of Data Flow in Service Provider Networks*. Supervisor: M. Hrubý
- Ignáčák, Miroslav: *Automatic Processor Functional Test Generator*. Supervisor: J. Hudec
- Kachman, Ondrej: *System Based on Davinci Platform, Designed for Visual Inspection of Printed Circuit Boards*. Supervisor: B. Dado
- Kincel, Andrej: *Test and Dependable Methods for RISC Processor*. Supervisor: M. Baláž
- Krnáčová, Zuzana: *Universal Device Control Platform*. Supervisor: I. Kotuliak
- Kružliak, Vladimír: *Methods for Receiving IP Services over Digital Broadcasting*. Supervisor: R. Broniš
- Lidák, Michal: *Power Estimation of System-level Hardware Model*. Supervisor: D. Macko
- Maruniak, Marián: *Multiplexer Tree Optimization Methods*. Supervisor: P. Pištek
- Maťo, Ján: *New Service for Mobile-TV Platform*. Supervisor: T. Kováčik
- Mazag, Ján: *Image Processing on Texas Instruments Platform*. Supervisor: B. Dado
- Medvec, Maroš: *Experimental Digital Synthesizer*. Supervisor: T. Krajčovič
- Minárik, Matúš: *Diagnostic Application for the Funtoro Platform*. Supervisor: P. Pištek
- Mnich, Pavol: *Innovative Service with Notification of Preferred Locations*. Supervisor: T. Kováčik
- Obetko, Jakub: *Dynamic MPLS Traffic Engineering Methods*. Supervisor: M. Hrubý
- Roštecký, Richard: *Interconnection of Content Delivery Networks*. Supervisor: R. Broniš
- Sekeráš, Marián: *Analysis and Management of Energy Consumption for Embedded Systems with Network Communication*. Supervisor: T. Krajčovič

- Straka, Viliam: *The Management of Numerical Calculations for HPC*.
Supervisor: M. Kožušník
- Šiplák, Šimon: *DNS Security in the Internet*. Supervisor: P. Magula
- Štepanovič, Martin: *Transport Protocols in Wireless Systems*.
Supervisor: P. Trúchly
- Šubín, Juraj: *Built-in Self-test and Self-repair for Embedded RAM Memories*.
Supervisor: Š. Krištofik
- Šulák, Viktor: *Controlling the Routing in the Next Generation Networks*.
Supervisor: P. Helebrandt
- Zelenaj, Roman: *System Providing Routing with Respect to the Quality of Service*.
Supervisor: M. Kotočová

Doctoral (PhD.) Theses

Student name: David Levy
Degree program: Applied Informatics
Thesis title: *WLAN Power Save by Header Compression and Packet Overhearing Reduction*
Supervisor: Ivan Kotuliak, Associate Professor
Defended on: August 22, 2014
Annotation: Efforts are underway in improving power conservation in handheld devices and thus increasing the interval between battery recharges. Power consumption is mainly due to the transmission of WLAN packets and listening and receiving packets. The WLAN transmitter is encapsulating all layer headers and adding its own header. In some cases, the combined headers length represents a significant portion of the frame length. This thesis focuses on reducing the combined headers length with general compression methods. Smaller headers imply smaller packets which reduce transmission time and therefore activate the WLAN transmitter for a shorter time. The receiver active time is also reduced using overhearing reduction. The performance of those new methods is evaluated using both simulation and analytical models, developed for this thesis. The models show that if those methods are combined, they can provide up to 30% power consumption reduction for high load and many active stations.

Student name: Peter Pištek
Degree program: Applied Informatics
Thesis title: *New Multiplexer-based Switching Circuit Synthesis Methods*
Supervisor: Milan Kolesár, Professor
Defended on: August 26, 2014
Annotation: The work deals with the problem of methods of synthesis of switching circuits with multiplexers and it is mainly focused on optimization and reduction of these circuits. It analyzes and describes the state of art in optimization and reduction methods of multiplexer trees and also contains description of the justification for the use of multiplexers in the switching circuits. Based on the analysis, the novel method of decision diagrams based binary decision diagrams which uses residual variable

is described. Proposed model can be easily transformed to the multiplexer tree. The proposed model was experimentally validated on the benchmark circuits with reference to the saving in the number of nodes in a model of what constitutes a major contribution to a new type of binary decision diagrams in switching circuits design with multiplexers. A new type of binary decision diagram allows anyone to work without using the lowest and most numerous level of nodes and through the preservation of the necessary properties of binary decision diagram allows its widespread use for a number of already existing, optimization methods as it is shown in performed experiments.

Student name: Ján Hudec
Degree program: Applied Informatics
Thesis title: *Contribution to the Methods and Algorithms of Automatic Generation of Functional Tests for Processors*
Supervisor: Elena Gramatová, Associate Professor
Defended on: December 18, 2014
Annotation: The dissertation thesis is aimed at automatic functional test generation methods for processors. The functional tests are mainly generated over an instruction set architecture and processor description in a language for hardware description. Such tests are categorized as software-based tests. A metric for their quality evaluation is obviously defined by code coverage of a described processor and used simulation tool with its calculation. A new automatic test generation method has been developed based on VHDL processor models and genetic algorithms with adaptation of various evolutionary strategies. In addition a specific fitness function and a new method for creation of a starting test (the first population) have been proposed and implemented. The main contribution is in the effective application of different genetic algorithms with various genetic operators in the adaptive mode using the latest evolutionary strategy definition. Functionality and effectiveness have been demonstrated on DP32 RISC type processor in VHDL and its instruction set using ModelSim simulator and the code coverage metric.

8.4 IIT.SRC Students' Papers

Full papers

- Babják, Miroslav: *GPRS Modem Emulator*. Supervisor: M. Nagy
- Burda, Kamil – Grežo, Rudolf – Hasin, Marek – Kohútka, Lukáš: *Therapeutic System for Children with Movement Disorders*. Supervisor: M. Nagy
- Galiński, Marek: *Ensuring QoS in SIP Single Port VoIP Networks with MPLS using SLAMCA*. Supervisor: J. Murányi
- Harvanová, Valéria: *Sensor System for Monitoring of Environment Characteristics*. Supervisor: T.Krajčovič
- Hucková, Ivana: *Optimization of Data Flow in Service Provider Networks*. Supervisor: M. Hrubý,

- Kachman, Ondrej: *System on a DaVinci Platform Designed for Visual Check of Circuit Boards*. Supervisor: B. Dado
- Kalčok, Martin – Hirjak, Tibor – Skalný, Ján – Križan, Matúš – Balga, Peter: *Application of Software Defined Networking (SDN) in GPRS Network*. Supervisor: I. Kotuliak
- Kincel, Andrej: *Built-in Self-repair for a Processor Multiplier*. Supervisor: M. Baláž
- Kohútka, Lukáš: *Faster Synthesis of Combinational Logic based on Multiplexer Trees and Binary Decision Diagrams*. Supervisor: P. Pišteň
- Kudlačák, František: *Synthesis of Asynchronous Sequential Circuits in High-performance Computing*. Supervisor: E. Gramatová
- Lidák, Michal: *Power Estimation of System-Level Hardware Model*. Supervisor: D. Macko
- Macko, Dominik: *Novel Power Management Unit Design*. Supervisor: K. Jelemenská
- Maruniak, Marián: *A New Multiplexer-based Circuit Synthesis Method Optimized to Multiple Parameters*. Supervisor: P. Pišteň
- Obetko, Jakub: *Dynamic QoS-aware MPLS Traffic Engineering*. Supervisor: M. Hrubý
- Siebert, Miroslav: *A Design-for-Testability Technique for Increasing Path Delay Fault Coverage*. Supervisor: E. Gramatová
- Šubín, Juraj: *Efficient Design of Maximal-size Local Bitmap for Repair Algorithms for RAMs*. Supervisor: Š Krištofik
- Vranec, Peter: *Performance Comparison of Selective TCP with Modern Variants of the TCP Protocol*. Supervisor: P. Trúchly

Extended Abstracts

- Fülöp, Pavol: *Monitoring of Process Resources Usage*. Supervisor: D. Bernát
- Lenčes, Lukáš: *A New Innovation in the e-Learning Systems: Knowledge Testing with Graphical Input*. Supervisor: B. Dado
- Mazag, Ján: *Image Processing on System-on-Chip Platform*. Supervisor: B. Dado

TP CUP Competition

- Onder, Ján – Polák, Martin – Trávníček, Tomáš – Urbán, Dávid – Zemaník, Lukáš: *Application for Funtoro Platform*. Supervisor: P. Pišteň

8.5 Research Laboratories

Networks Technology Laboratory I

Manager: P. Trúchly

Contact: peter.truchly@stuba.sk

Description: The research and teaching laboratory is used in practical lessons with several network courses, as well as for networking courses of Cisco Networking Academy, established at our faculty. The students are in-

volved in design, implementation, and verification of applications for computer networks. They are trained to install, configure and operate local and wide-area networks. The laboratory is also used by the Instructor Training Centre which is a part of Cisco Networking Academy. The available hardware equipment helps students and other staff in their research during practical experiments while working on research projects, bachelor, master, or doctoral thesis. Laboratories are equipped with several network interconnecting devices, like switches and routers. All devices are originated mainly in Cisco company.

Networks Technology Laboratory II

Manager: P. Trúchly

Contact: peter.truchly@stuba.sk

Description: This research and teaching laboratory is dedicated to teaching WAN technologies to undergraduates, communication services and networks and network security to graduates in the study programme Computer and communication systems and networks. Students gain and prove their practical and theoretical skills. The skills are developed that enable students to design, implement, and troubleshoot scalable local and wide-area networks, create and deploy a global intranet, using routers and switches for multiprotocol client hosts and services. Students are also involved in design, implementation and verification of applications for computer networks and parallel processing. For teaching and testing wireless communication the laboratory is equipped with wireless access points, wireless network cards are available and necessary software tools.

Embedded Systems Laboratory

Manager: T. Krajčovič

Contact: tibor.krajcovic@stuba.sk

Description: The laboratory is focused on the embedded system research. It is equipped with all necessary equipment for design, implementation and testing of applications for embedded systems based on modern microprocessors, one-chip microcomputers and soft-core processors, including real-time applications. It contains specialized equipment, such as development kits based on monolithic microprocessors and one-chip microcomputers with RISC and CISC architectures, FPGA and CPLD development kits, logical analyzers, in-circuit and JTAG emulators, digital oscilloscopes and other development tools.

Digital Systems Design Laboratory

Manager: K. Jelemenská

Contact: katarina.jelemenska@stuba.sk

Description: The research and teaching laboratory is predefined for teaching digital system description to undergraduates and digital systems design, testing, diagnostics and reliability and reconfigurable digital systems to graduates in the study programme Computer and Communication systems and networks. Students are to prove their practical and theoretical skills. They are involved in design, description, implementation

and verification of small to medium digital systems. Laboratory is equipped with Internet connected computers, RC10 FPGA boards and necessary software tools to gain practical skills in the area of digital systems design – FPGA Advantage.

Communication Technologies Laboratory

Manager: I. Kotuliak

Contact: ivan.kotuliak@stuba.sk

Description: The research and teaching laboratory is intended for perspective research topics in the area of communication networks. These topics cover network routing controlled by software (Software Defined Networking – SDN) that is applied to both fixed and mobile networks, to be more specific. In the area of wireless networks we are engaged in decreasing energy consumption during communications to utilise batteries more effectively. Important research topics are also associated with a delivery of multimedia applications to users. So called Content Delivery Networks (CDN) are raising more and more attention in coming years.

FIIT – Molpir, Ltd. Laboratory

Manager: P. Pištek

Contact: peter.pistek@stuba.sk

Description: The main purpose of the laboratory is research of multimedia applications oriented towards transport. The research is dedicated to the possibility of applying IT in transport and their usefulness and application in practice. Research is conducted using the specialized equipment specially developed for use in cars, buses, trains etc. The aim is to develop the novel applications aimed at leveraging existing hardware that will bring the user new functionality in the specific domain. Technologies such as GPS, ultrasonic sensor, touch screens, dedicated servers for transport etc. are currently available in the lab. With these technologies it is possible to work using various operating systems (FreeBSD, Windows 6.0, Windows XP Embedded, Android 1.5, Android 2.3, Android 4.0). The aim is to create useful applications for passengers, drivers, or owners of means of transport. The laboratory was established as a result of cooperation with Molpir, Ltd. It is also opened to students working on research projects, bachelor, master thesis, and team projects.

8.6 Research projects

Design Optimization of Low-power Digital and Mixed Integrated Systems (VEGA 1/1008/12)

Project leader: K. Jelemenská

Members: E. Gramatová, M. Ďuriček, J. Hudec, P. Jombík, Š. Krištofik, F. Kudlačák, D. Macko, P. Pištek, M. Siebert, M. Vojtko

Supported by: Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences

Duration: January 2012 – December 2015

Description: The project is focused on basic research and technologies in low-power digital and mixed system design methods and algorithms optimized for low-power electronic device applications. The power supply consumption is important parameter in nowadays battery-operated mobile electronic devices. This aspect has to be taken into account during the whole design process, in using design for testability and reliability techniques as well. The main project target is to develop methods, techniques and algorithms for top-down design of digital and mixed circuits integrated into a single chip using accessible CMOS technologies while focusing on the low-power parameter.

Methods for the Design and Verification of Digital Systems with Low Power Consumption Using Formal Specification Languages (VEGA 1/0616/14)

Project leader: P. Čičák
Members: E. Gramatová, M. Hrubý, J. Hudec, K. Jelemenská, M. Jurikovič, D. Macko, M. Olšovský, P. Pišteň, E. Tomalová
Supported by: Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences
Duration: January 2014 – December 2016
Description: The project is focused on the basic research in the field of modeling, design and verification of digital systems with low power consumption using high-level formal specification languages. At present, digital systems modeling and verification at a higher level of abstraction is still one of the important objects of basic research because of the complexity and difficulty of the design at the structural level. The project aims at developing new methods and algorithms for modeling, design and verification of digital systems at the system level based on specification language (e.g. HSSL), or other means of modeling, taking into account the requirement of low power system. Expected outputs are new approaches, methods and algorithms for digital systems design and verification at higher abstraction levels supporting reductions in system consumption and supplemented by design transformation procedures to established lower-level design platforms (VHDL, Verilog, SystemVerilog etc.).

Network Architectures for Multimedia Services Delivery with QoS Guarantee (VEGA 1/0676/12)

Project leader: I. Kotuliak
Members: T. Krajčovič, M. Kotočová, J. Flochová, B. Dado, P. Trúchly, D. Bernát, M. Olšovský, J. Balažia, T. Kováčik, A. Binder, M. Hrubý, P. Magula, J. Murányi, R. Broniš, P. Helebrandt, T. Halagan, M. Nagy
Supported by: Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences
Duration: January 2012 – December 2014
Description: This project aims to follow up the FP7 HBB-Next project goals and with regard to the designs for the Future Generation Internet in three areas:

- i) accelerating the roaming in WiFi networks to enable effective provision of multimedia services as well as to address routing problems in the case of ad-hoc networks
- ii) improving the provision of quality services by streamlining routing, message queues in nodes and modifications of fourth layer protocols for BIC, CUBIC networks
- iii) modification of existing architectures for providing multimedia services and sharing between operators and providers, effective delivery through clouds and content distribution through the hybrid technologies

Verification and Reliability of dDigital System Design (SK-CZ-2013-0173)

Project leader: E. Gramatová
Members: M. Ďuriček, K. Jelemenská, Š. Krištofik, D. Macko, M. Siebert, M. Vojtko
Supported by: Slovak Research and Development Agency
Duration: January 2014 – December 2015
Description: The project is aimed at basic research in the field of design and verification techniques and algorithms for digital systems on chip, or embedded systems, taking into account system testability and dependability and use of FPGA (Field Programmable Gate Array) technologies. The project objective is to establish a new scientific and technological cooperation and its expected scientific contribution will be dependable architectures of digital systems implemented into FPGA circuits. Consequence of the project outcomes will be logistic and economic benefits of FPGAs for critical applications to guarantee higher operational reliability.

FP7 HBB Next Project: FP7-287848 HBB-NEXT

Project leader: I. Kotuliak for UPSS
Members: T. Kováčik, R. Broniš
Supported by: EC Seventh Framework Programme (FP7/2007-2013) under Grant Agreement n° 287848
Duration: October 2011 – March 2014
Description: The project will deliver a web-based frame-work for device-independent applications that can syndicate content from multiple sources for real-time content composition. Content may also be distributed across users in geographically distinct areas. HBB-NEXT seeks to facilitate the marriage of the broadcast and Internet world by researching user-centred technologies for enriching the TV-viewing experience: Multi-user tailored content recommendations and seamless access to content via multiple devices are centre stage while social media features or user generated content round off the picture.

Manufacturable and Dependable Multicore Architectures at Nanoscale (COST Action IC 1103)

Project leader: E. Gramatová
Members: J. Hudec, K. Jelemenská, T. Krajčovič, P. Pištek, M. Ďuriček, Š. Krištofik, D. Macko, M. Siebert, M. Vojtko
Supported by: COST, EU Framework Programme

Duration: January 2013 – December 2015
Description: The project topics can be divided into the next fields: -Design: tasks oriented to low-power design techniques for digital circuits and hazard-free asynchronous circuits design. - Testing: development of new techniques and architectures for built-in self-testing and self-repairing RAMs with redundant memory locations for increasing memory manufacturing yields. - Verification: analysis of different techniques and approaches, languages for formal verification of digital systems design.

Therapy of a Cerebral Palsy with the Aid of Computer Games (2013et029)

Project leader: M. Nagy
Members: I. Kotuliak, K. Burda, R. Grežo, M. Hasin, L. Kohútka
Supported by: Tatra Banka Foundation
Duration: February 2014 – November 2014
Description: A cerebral palsy belongs to the most frequent juvenile disabilities of a neural system. It is an incurable disease but the therapy can radically increase the quality of life of the handicapped. Therapy requires a qualified therapist at the specialized place or a dependant who manages the exercises. There is no existence of an applicable method because of an individual character of this handicap. Classic forms of the therapy are for children unfunny and demotivating. Existing alternative methods are also time-consuming and capital-intensive or they do not cover up the therapy of a cerebral palsy in a complex way. This project is aimed to the creation of the system which will use commercially available hardware (sensors pursuing the body of the patient) for the regulation of especially designed therapeutic computer games. This system will be oriented not only towards motoric handicap but also to the social and communication aspects as the handicap often forms barriers between the patient and his environment.

8.7 Publications

Journals

LEVY, David - KOTULIAK, Ivan - TRÚCHLY, Peter. WLAN Performance Improvement by Header Compression and Packet Overhearing Reduction. In: *Journal of Electrical Engineering*. Vol. 65, no. 4 (2014), s. 203-212.

OLŠOVSKÝ, M.: Advanced Notification System For TCP Performance Increase. In: *Information Sciences and Technologies*. Bulletin of the ACM Slovakia. Vol. 6, no. 2 (2014), s. 1-10.

International Conferences

ĎURÍČEK, M. - KRAJČOVIČ, T.: Interactive Hybrid Control-Flow Checking Method. In: *Applied Electronics 2014*. Proceedings of the 19th International Conference. Pilsen, Czech Republic, Pilsen : University of West Bohemia, 2014. pp. 79-82.

HARVANOVÁ, V. - KRAJČOVIČ, T.: Wireless Home Monitoring System - Design and Evaluation. In: Pinker, J. (ed.) *Applied Electronics 2014*. 19th Inter. Conference. Pilsen, Czech Republic, Pilsen: University of West Bohemia, 2014. pp. 103-106.

- HELEBRANDT, P. - KOTULIAK, I.: Novel SDN Multi-domain Architecture. In: *ICETA 2014*. 12th IEEE International Conference on Engineering eLearning Technologies and Applications. Starý Smokovec, Slovakia. Danvers : IEEE, 2014. pp. 139-143.
- JELEMENSKÁ, Katarína - MAZAG, Ján - ČIČÁK, Pavel: Interactive Presentation Towards Interactive and Collaborative Learning. In: *ICETA 2014*. 12th IEEE International Conference on Engineering eLearning Technologies and Applications. Starý Smokovec, Slovakia. Danvers : IEEE, 2014. pp. 209-214.
- KOHÚTKA, L. - PIŠTEK, P.: Faster Synthesis of Combinational Logic Based on Multiplexer Trees and Binary Decision Diagrams. In: *ICETA 2014*. 12th IEEE International Conference on Engineering eLearning Technologies and Applications. Starý Smokovec, Slovakia. Danvers : IEEE, 2014. pp. 239-244.
- KOTULIAK, I. - NAGY, M.: Utilizing OpenFlow, SDN and NFV in GPRS Core Network. In: *TRIDENTCOM 2014*. Testbeds and Research Infrastructure: Development of Networks and Communities, Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering, Springer International Publishing, 2014, p. 137.
- KUDLAČÁK, F. - E. GRAMATOVÁ: Asynchronous Sequential Circuits Synthesis by High-Performance Computing. In: *Baltic Electronics Conference 2014*. Tallin, ISSN 1736-3705.
- KUDLAČÁK, F. - KRAJČOVIČ, T.: Error Dependency on Dynamicity of Process in PID Regulator Systems. In: *CISSE 2014*, University of Bridgeport.
- MACKO, D. - JELEMENSKÁ, K. - ČIČÁK, P.: Power-efficient Power-Management Logic. In: *PATMOS 2014. Proceedings of the 24th International Workshop on Power Training and Timing Modeling, Optimization and Simulation*, 2014. IEEE, 2014. 4 p.
- MACKO, D. - JELEMENSKÁ, K.: Self-managing Power Management Unit. In: *DDECS 2014*. Proceedings of the IEEE 17th International Symposium on Design and Diagnostics of Electronic Circuits and Systems. Warsaw, Poland. Warsaw : IEEE, 2014. pp. 159-162.
- SIEBERT, M. - GRAMATOVÁ, E. - NAGY, L.: PaCGEN: Automatic System for Critical Path Selection Based on Multiple Parameters. In: *Proceedings of the 14th Biennial Baltic Electronics Conference*. Los Alamitos, 2014, pp. 97-100.
- TRÚCHLY, P. - HUMENÝ, L.: Intuitive Graphical Interface for Network Simulator 2 Supporting Trainings in Computer Networks. In: *ICETA 2014*. 12th IEEE International Conference on Engineering eLearning Technologies and Applications. Starý Smokovec, Slovakia. Danvers : IEEE, 2014. pp. 483-488.
- TRÚCHLY, P. - PETRÍK, T.: Mobile application supporting an engage in sport and social activities. In: *ICETA 2014*. 12th IEEE International Conference on Engineering eLearning Technologies and Applications. Starý Smokovec, Slovakia. Danvers : IEEE, 2014. pp. 477-482.

Selected Local and National Conferences

- BERNÁT, D.: Measurement Based Analysis of the Internet Topology. In: *ITAT 2014*. Information Technologies – Applications and Theory : Proceedings of the 14th Con-

- ference ITAT 2014 - workshops and posters, Jasná, Slovak republic, Prague : Institute of Computer Science AS CR, 2014. pp. 115-119.
- HALAGAN, T. - KOVÁČIK, T.: Modification of TCP SYN Flood (DoS) Attack Detection Algorithm. In: *Numerical Modelling and Simulation*. International Interdisciplinary PhD workshop IIPhDW, Tatranské Matliare, Slovak republic, Warsaw : Elektrotechnical institute, 2014. 4 p.
- KOPECKÝ, M. - ONDRÁŠIK, M. - ANTOLOVÁ, D. - MAGULA, P.: Proposal of Landslide Monitoring Threatening the Derivation Channel Near Power Plant Sucany. In: *XXXIV. Priehradné dni 2014*. International Conference Proceeding. Horný Smokovec, Slovak Republic, Košice : Slovenský vodohospodársky podnik, 2014. pp. 295-305. (in Slovak)
- KRIŠTOFÍK, Š.: Repair Algorithm for Rams and its Adaptation for Block-Based Architecture. In: *Computer Architecture and Diagnostics 2014*. Workshop for PhD Students, Malá Skála, Czech Republic, Liberec : Technická univerzita v Liberci, 2014. pp. 165-170. (in Slovak).
- KUDLAČÁK, F.: Adaptive PID controller. In: *Computer Architecture and Diagnostics 2014*. Workshop for PhD Students, Malá Skála, Czech Republic, Liberec : Technická univerzita v Liberci, 2014. pp. 62-67.
- MACKO, D.: Contribution to the Low-power Design. In: *Computer Architecture and Diagnostics 2014*. Workshop for PhD Students, Malá Skála, Czech Republic, Liberec : Technická univerzita v Liberci, 2014. pp. 125-130.
- SIEBERT, M.: Parametrised Critical Path Selection in Digital Systems. In: *Computer Architecture and Diagnostics 2014*. Workshop for PhD Students, Malá Skála, Czech Republic, Liberec : Technická univerzita v Liberci, 2014. pp. 95-100. online, (in Slovak)

Books

- ČIČÁK, P. - ĎUĐÁK, J.: Petri Nets and Their Application in Control and Communication Systems Design. 1st ed. Košice : Elfa, 2014. ISBN 978-80-8086-233-6. 198 p. (in Slovak)

8.8 Cooperation

Cooperation in Slovakia

- Institute of Informatics, Slovak Academy of Sciences, Bratislava
- Faculty of Electrical Engineering and Information Technology, Slovak University of Technology in Bratislava
- Faculty of Electrical Engineering and Informatics, Technical University of Košice
- Regional Cisco Networking Academy, Faculty of Electrical Engineering and Informatics, Technical University of Košice
- Faculty of Natural Sciences, Matej Bel University in Banská Bystrica
- Faculty of Management Science and Informatics, University of Žilina
- Faculty of Electrical Engineering, University of Žilina

- Regional Cisco Networking Academy, Faculty of Management Science and Informatics, University of Žilina
- Faculty of Informatics, Paneuropean University, Bratislava
- Abonus Ltd.
- Alcatel Lucent
- Asseco Slovakia
- CISCO Systems Slovakia Ltd.
- Datalan
- GTEC Ltd.
- Hewlett-Packard Slovakia Ltd.
- IBM Slovakia Ltd.
- Molpir Ltd.
- Siemens Enterprise Communications Ltd.
- Soitron
- Spinet Ltd.
- Telekom
- Tempest
- MAINDATA, spol. s. r.o.

International Cooperation

- Department of Computers, Faculty of Electrical Engineering, Czech Technical University in Prague, Czech Republic
- Faculty of Information Technologies, Brno University of Technology, Czech Republic
- Department of Computer Science and Engineering, Faculty of Applied Science, University of West Bohemia in Pilsen, Czech Republic
- Faculty of Computer Systems and Control, Technical University in Sofia, Bulgaria
- Hochschule für Telekommunikation Leipzig, Germany
- INRIA, Grenoble, France
- Institut Supérieur D'Electronique de Paris, France
- University of Maribor, Maribor, Slovenia
- Heinz Nixdorf Institute, University of Paderborn, Germany
- Microelectronic Systems Institute, TU Darmstadt, Germany
- Fraunhofer Institute for Integrated Circuits, Dresden, Germany
- TNO, Netherlands
- Universidad Carlos III de Madrid, Madrid, Spain
- Rundfunk Berlin-Brandenburg, Germany

- Institut für Rundfunktechnik GmbH, Germany
- NEC Europe Ltd.
- Nederlandse Organisatie voor Tögepast Natuurwetenschappelijk Onderzoek, Netherlands
- Katholieke Universiteit Leuven, Belgium
- Technische Hochschule Mittelhessen, Germany
- TARA Systems Systementwicklung GmbH, Germany

Visits of Staff Members

- *K. Jelemenská, E. Gramatová, D. Macko*: 17th IEEE Symposium on Design and Diagnostics of Electronic Circuits and Systems, DDECS 2014, Warsaw, Poland, April 22-25, 2014
- *M. Nagy*: 9th International Conference on Testbeds and Research Infrastructures for the Development of Networks and Communities, TRIDENTCOM 2014, Guangzhou, China, May 2-14, 2014
- *E. Gramatová, K. Jelemenská, M. Siebert, D. Macko, F. Kudlačák, Š. Krištofik*: PAD 2014, Liberec, Czech Republic, September 4-6, 2014
- *M. Ďuriček, T. Krajčovič*: AE 2013, 20th International Conference on Applied Electronics, Pilsen, Czech Republic, September 8-11, 2014
- *F. Kudlačák, M. Siebert*: The 14th Biennial Baltic Electronics Conference, BEC 2014, Tallinn, Earoni, October 5-10, 2014
- *D. Macko*: University of Balearic Islands, Mallorca, September 28 - October 2, 2014
- *P. Trúchly*: Czech Technical University in Prague, Czech Republic, October 15-16, 2014
- *T. Kováčik*: Hungary, October 22, 2014
- *E. Gramatová*: Brandenburgische Technische Universität Cottbus, Cottbus, Germany, November 6-7, 2014
- *E. Gramatová*: Brno University of Technology, Czech Republic, November 12, 2014
- *K. Jelemenská, D. Macko, M. Siebert*: Czech Technical University in Prague, Czech Republic, November 25-29, 2014

8.9 Membership in Professional Organisations and Societies

Slovak Professional Organisations and Societies

Pavel Čičák

- Slovak Centre of the IEE (member, since 1999)
- Slovak Society of Computer Science (member, since 2012)

Ivan Kotuliak

- Slovak Information Society (member, since 2013)

International Professional Organisations and Societies

Pavel Čičák

- IET, Institute of Engineering and Technology (fellow, since 2000)
- ECUK, Engineering Council UK (Chartered Engineer, since 2000)
- IEEE, Institute of Electrical and Electronic Engineers (member, since 2013)

Jana Flochová

- IEEE, Institute of Electrical and Electronic Engineers (member, since 1998)

Elena Gramatová

- TTTC, Test Technical Technology Council (contact person for SR, since 1996)
- IEEE - Institute of Electrical and Electronic Engineers (member, since 2000)
- IEEE Computer Society Golden Core (member, since 2003)

Ján Hudec

- New York Academy of Sciences, member (member, since 1997)

Katarína Jelemenská

- IEEE, Institute of Electrical and Electronic Engineers (member, since 2013)

Ivan Kotuliak

- IEEE, Communication Society IEEE, IFIP WG 6.8 (member, since 2012)

Tibor Krajčovič

- Slovak Commission for UNESCO. Informatics, Information and Communication Technologies (member, since 1994)

Dominik Macko

- IEEE, Institute of Electrical and Electronic Engineers (member, since 2013)

Michal Olšovský

- ACEEE - The Association of Computer Electronics and Electrical Engineers (member, since 2012)

8.10 Other Activities

- Newsletter of Cisco Networking academy in Slovakia – P. Čičák: members of editorial board
- Working Group of the Accreditation Commission of Slovakia for Information Sciences and Technologies – E. Gramatová, member
- Scientific Board of IT4 Innovation project – E. Gramatová, member
- DDECS 2014 – 17th IEEE Symposium on Design and Diagnostics of Electronic Circuits and Systems, April 2014, Warsaw, Poland – E. Gramatová: member of programme and steering committees, K. Jelemenská: member of programme committee
- EWDTS 2014 – 12th East-West Design & Test Symposium, September 2014, Sochi, Russia – E. Gramatová: member of programme committee
- ICETA 2014 – 12th International Conference on Emerging E-Learning Technologies and Applications, December, 2014, Starý Smokovec, Slovak Republic –

P. Čičák, E. Gramatová, K. Jelemenská, I. Kotuliak: members of programme committee

- IIT.SRC 2014 – Informatics and Information Technologies Student Research Conference – P. Čičák, E. Gramatová, K. Jelemenská, M. Kotočová, I. Kotuliak, T. Krajčovič: members of programme committee
- PAD 2014 – Czech and Slovak Seminar on Computer Architectures and Diagnostics, September 4-6, 2014, Malá Skála, Czech Republic – E. Gramatová: member of steering committee, E. Gramatová, K. Jelemenská: members of programme committee

9 Institute of Informatics and Software Engineering

E-mail: uisi@fiit.stuba.sk
Web: <http://www.uisi.fiit.stuba.sk/>
Tel: + 421 918 687 990
Fax: + 421 2 654 205 87

The main mission of the Institute of Informatics and Software Engineering is to contribute to the mission of Slovak University of Technology and to the mission of the Faculty of Informatics and Information Technologies in the range of its competencies, in areas bounded by and related to informatics, information systems and software engineering. Among the related areas, it is oriented especially to artificial intelligence in research of knowledge approaches in solving problems of informatics, information systems and software engineering, and to information systems respecting their close relation to typical problem domains in software engineering.

Within the mission, the institute especially

- contributes through its research to development of knowledge in the areas of science and technologies belonging to the mentioned areas,
- provides successful and high-quality study programmes in areas of its competencies at each of the three levels of university education, in which
 - bachelor study graduates are excellently prepared for both the national and international labour market and are able to take care of themselves in their own business and also to create employment opportunities to others,
 - master study graduates acquire competencies and abilities to be leaders of specialist teams with deep expert knowledge and ability of high creativity,
 - doctoral study graduates are able to bring new original and innovative solutions of complex problems.

The institute is responsible for education in the following accredited degree programmes:

- Informatics (bachelor degree),
- Information Systems (master degree),
- Software Engineering (master degree),
- Software Systems (doctoral degree).

The Institute of Informatics and Software Engineering fulfils the mission through the research activities relevant both in a national and international context and by extending, deepening and improving the offer of courses provided to students at all the three levels of university studies.

The Institute endeavours actively to cooperate. It includes interdisciplinary research and studies at other similar institutes, institutions and departments of its Faculty, its University, in Slovakia, in Europe and throughout the world. In particular, in 2007 the Institute was invited to join the international consortium of research institutions devoted to *Web Intelligence*. The Institute represents Slovakia in the consortium and contributes to promoting research in Web Intelligence worldwide. In 2009 the Institute has become partner of *European Network of Excellence on Aspect-Oriented Software Development, AOSD-Europe*, which integrates and coordinates research, education and dissemination activities of its members in the area of aspect oriented development of software. Originally, it has been a 7th Framework Programme project.

The Institute aims at becoming the leading Slovak institution in the areas of its competencies with ambitions to positively influence their development. The Institute is conscious of its high responsibility to the public and it provides expert services to it, thus improving life of the town, the region, the country and the mankind. The Institute looks for synergies with industry and enterprise community, and jointly tries to raise research and education quality in the areas of informatics and information technologies.

9.1 Staff

Director

Pavol Návrat, Professor

Deputy Director

Mária Bieliková, Professor

Viera Rozinajová, Assoc. Professor

Administrative Department

Zuzana Macková

Mária Matfiaková (since September 2014)

Alexandra Zakálová

Teaching Staff

Nadežda Andrejčíková, PhD. (part time)

Michal Barla, PhD. (part time)

Mária Bieliková, Professor

Anna Bou Ezzeddine, PhD.

Iveta Dekýšová

Ján Genči, Assoc. Professor (part time)

Marta Gnipová (part time)

Daniela Chudá, Assoc. Professor

Jaroslav Jakubík, PhD. (part time)

Ivan Kapustík

Michal Kompan, PhD.

Alena Kovárová, PhD.

Gabriela Kosková, PhD.

Rastislav Královič, Professor (part time)
Tomáš Kramár, PhD. (part time)
Peter Lacko, PhD.
Michal Laclavík, Assoc. Professor (part time)
Ján Lang, PhD.
Marián Lekavý PhD. (part time)
Eva Letovancová, Assoc. Professor (part time)
Mária Lucká, Assoc. Professor
Ľudovít Molnár, Professor Emeritus
Pavol Návrat, Professor
Jozef Papula, Professor (part time)
Jaroslav Pokorný, Professor (part time)
Ivan Polášek, PhD.
Anna Považanová (part time)
Viera Rozinajová, Assoc. Professor
Petr Šaloun, Assoc. Professor (part time)
Lubor Šešera, PhD. (part time)
Jakub Šimko, PhD.
Marián Šimko, PhD.
Marián Šuráb, Professor (part time)
Jozef Tvarožek, PhD.
Valentino Vranić, Assoc. Professor
Michal Winczer, PhD. (part time)
Dušan Zeleník, PhD. (part time)

External Lecturers

Danica Šoltéssová, PhD.

Full-Time PhD Students

Miroslav Blšták
Michal Bystrický
Tomáš Frťala
Zoltán Harsányi
Michal Holub
Ondrej Kaššák
Martin Konôpka
Peter Krátky
Peter Kubán
Tomáš Kučečka
Eduard Kuric
Martin Labaj
Peter Laurinec
Marek Lóderer
Róbert Móro
Aurel Paulovič
Karol Rástočný
Štefan Sabo

Ivan Srba
 Márius Šajgalík
 Roman Šelmeci
 Jakub Ševcech
 Petra Vrablecová

9.2 Teaching

Undergraduate Study (Bc.)

Course	Semester	Credits	Lecturer
Artificial Intelligence	Spring	6	P. Návrat
Basics of Procedural Programming	Autumn	6	G. Kosková
Communication in Culture History	Spring	3	D. Šoltéssová
Construction of Effective Algorithms	Spring	6	R. Královič
Database Systems	Spring	6	M. Barla
Data Structures and Algorithms	Autumn	6	P. Návrat
Entrepreneurship and Management	Autumn	5	J. Papula
Final Bachelor Project 0–II	Autumn Spring	3-3-9	P. Návrat
Functional and Logic Programming	Spring	6	M. Bieliková
Information and Communication Technologies Law	Spring	5	I. Dekýšová
Introduction to Foundations of Mathematic	Autumn	6	M. Lucká
Management of Social Systems	Spring	3	E. Letovancová
Managerial Economics	Autumn	5	V. Mlynarovič
Object-Oriented Programming	Spring	6	V. Vranič
Program Development for Java Platform	Spring	6	J. Jakubík
Principles of Information Systems	Autumn	5	V. Rozinajová
Principles of Software Engineering	Spring	7	M. Bieliková
Procedural Programming	Autumn	6	A. Bou Ezzeddine
Procedural Programming Seminar	Autumn	0	G. Kosková
Research Seminar I-IV	Autumn Spring	0-3-3-3	M. Bieliková
Seminar of Mathematic	Autumn	3	M. Lucká
Software Systems Development	Spring	3	M. Bieliková
Specification Methods and Tools	Spring	5	V. Vranič
Social Connotations of Informatics and Information and Communication Technologies	Spring	3	M. Winczer
Theoretical Foundations of Informatics	Spring	6	D. Chudá
Web Publishing	Spring	6	P. Šaloun

Master Study (Ing.)

Course	Semester	Credits	Lecturer
Advanced Database Systems	Autumn	6	J. Genči
Architecture of Information Systems	Autumn	4	V. Rozinajová
Architecture of Software Systems	Autumn	4	I. Polášek
Application Architectures of Software Systems	Spring	6	L. Šešera
Aspect-Oriented Software Development	Autumn	6	V. Vranić
Diploma Project I–III (Information Systems)	Autumn Spring	8-12-20	P. Návrat
Diploma Project I–III (Software Engineering)	Autumn Spring	8-12-20	M. Bieliková
Distributed Software Systems	Autumn	6	P. Lacko
E-communication of Business and Administrative Processes	Spring	6	P. Frič
History of Design	Autumn	5	D. Šoltéssová
Industry Project	Spring	5	I. Polášek
Information Search	Autumn	5	M. Laclavík
Knowledge Discovery	Autumn	6	G. Kosková
Knowledge-Based Systems	Autumn	5	I. Kapustík
Law – Selected Problems	Autumn	5	I. Dekýšová
Management of Software and Information System Projects	Spring	6	M. Bieliková
Object-Oriented Analysis and Design	Autumn	6	I. Polášek
Quality of Program and Information Systems	Spring	6	D. Chudá
Research of Information Systems	Autumn	2	P. Návrat
Research of Software Systems	Autumn	2	M. Bieliková
Rhetoric	Autumn	5	M. Šuráb
Software Languages	Autumn	6	P. Lacko
Team Project I-II (Information Systems, Software Engineering)	Autumn Spring	7-5	M. Bieliková

9.3 Theses**Bachelor (Bc.) Theses - Graduates 2014***Study Programme Informatics*

- Andrášik, Daniel: *Image Segmentation*. Supervisor: A. Bou Ezzeddine
- Brocková, Barbora: *Searching for Thematically Similar Documents*. Supervisor: T. Kučečka
- Cibula, Martin: *Building a Bibliographic Database*. Supervisor: Z. Harsányi

- Cihák, Michal: *Interactive Visualization of Source Code Development over Time*. Supervisor: A. Kovárová
- Csóka, Bálint: *Innovative Application of Small Computing Devices*. Supervisor: M. Tomša
- Cymorek, Dušan: *Mobile Devices and RFID Technology in Library*. Supervisor: N. Andrejčíková
- Čaja, Matej: *Personalized Search in Digital Library*. Supervisor: T. Kramár
- Daniš, Igor: *Application of Web 3.0 Technologies in Business Environment*. Supervisor: M. Líška
- Demčák, Vladimír: *Recommendation Using Personal Expressions*. Supervisor: P. Návrat
- Egriová, Jana: *Multi Agent Systems for Web Searching*. Supervisor: Š. Sabo
- Ferenčík, Alexander: *Gaming Artificial Intelligence Based on Multiagent Approach*. Supervisor: M. Lekavý
- Filipčík, Richard: *Evaluation of Student Activity and Motivation in an Educational Web-based System*. Supervisor: M. Bieliková
- Galambosi, Jaroslav: *Visualization of a User Model and its Changes in Time*. Supervisor: M. Šajgalík
- Gallik, Patrik: *Standardized Web Pages*. Supervisor: A. Považanová
- Garaj, Michael: *Searching in Source Codes Based on Authors' Reputation*. Supervisor: E. Kuric
- Gašpar, Peter: *Recommendation Using Personal Expressions*. Supervisor: P. Návrat
- Grman, Erik: *The Planning of Player of Simulated Robotic Football*. Supervisor: I. Kapustík
- Horniak, Dominik: *Multi-agents Systems for Web Search*. Supervisor: Š. Sabo
- Horváth, Peter: *Gmail Gadget: Extraction of Events from E-mail Communication and Integration with Calendar*. Supervisor: M. Laclavík
- Chomo, Matej: *Mobile Devices and RFID Technology in the Library*. Supervisor: N. Andrejčíková
- Juras, Francisc: *Source Code Annotating*. Supervisor: K. Rástočný
- Katkó, Daniel: *Visualization of Graph Algorithms*. Supervisor: M. Lucká
- Kiš, Peter: *Analysis of Interactive Problem Solving*. Supervisor: J. Tvarožek
- Kloska, Matej: *Keyword Map Visualisation*. Supervisor: M. Šimko
- Kochjar, Juraj: *Bibliographic Data Relations and its Web-based Visualization*. Supervisor: Z. Harsányi
- Kostoláni, Milan: *Multidimensional Displaying of Model in UML*. Supervisor: I. Polášek
- Krivý, Ján: *Recommendation Based on the User's Personal Expressions*. Supervisor: P. Návrat

-
- Kubinec, Eduard: *Development of Information Systems According to the Principles of Service Oriented Architecture*. Supervisor: V. Rozinajová
 - Kucek, Matej: *Planning of Player in Simulated Robotic Soccer*. Supervisor: I. Kapustík
 - Kudláč, Miroslav: *Semantic Wiki*. Supervisor: J. Šimko
 - Kuric, Dejan: *Visualisation of Graph Algorithms*. Supervisor: M. Lucká
 - Lenčucha, Andrej: *Innovative Application of Small Computing Devices*. Supervisor: M. Tomša
 - Lieskovský, Adam: *Supporting Query Formulation*. Supervisor: R. Móro
 - Liskovec, Matej: *Combined Use of Sensors in Mobile Devices*. Supervisor: V. Vranič
 - Loeb, Jaroslav: *Word Sense Disambiguation*. Supervisor: M. Šimko
 - Lošák, Martin: *Online Library Catalogue for Children*. Supervisor: N. Andrejčíková
 - Lovasová, Viktória: *Recommendation in Adaptive Educational System*. Supervisor: M. Labaj
 - Markovič, Lukáš: *Refactoring Support Using Transformations between Java and XML*. Supervisor: I. Polášek
 - Masár, Lukáš: *Framework for Creating Scalable Web Applications in Erlang Language*. Supervisor: A. Paulovič
 - Mazán, Filip: *Web Content Summarization*. Supervisor: J. Tvarožek
 - Melaga, Dominik: *Model Driven Development of Mobile Application*. Supervisor: V. Vranič
 - Melicher, Tomáš: *The Analysis of Methods of Solving Interactive Tasks*. Supervisor: J. Tvarožek
 - Melis, Martin: *The Use of Enterprise Architecture Tools in Getting the Organization Processes More Effective*. Supervisor: V. Rozinajová
 - Melko, Jozef: *Search Source in Unstructured P2P Networks*. Supervisor: P. Lacko
 - Michálek, Pavol: *Interactive Visualization of Source Code Development over Time*. Supervisor: A. Kovárová
 - Mikle, Filip: *Innovative Application for the International Competition*. Supervisor: J. Šimko
 - Minárik, Matej: *Innovative Application within International Competition*. Supervisor: J. Šimko
 - Nárožný, Branislav: *Examination of Messages from a Web Services Based on REST Architectural Style*. Supervisor: R. Šelmeci
 - Nemeč, Radoslav: *Image Segmentation Based on Clustering*. Supervisor: G. Kosková
 - Novotný, Miroslav: *Player's Decision Making in Robotic Football*. Supervisor: I. Kapustík

- Ogurčák, Vladimír: *Image Segmentation Based on Clustering*. Supervisor: G. Kosková
- Piliar, Andrej: *Development of Information Systems Due to Principles of Service Oriented Architecture*. Supervisor: V. Rozinajová
- Podlucká, Jana: *Evaluation of Code Quality and Programmer's Knowledge Determination*. Supervisor: D. Zeleník
- Poljak, Pavol: *Standardized Web Sites*. Supervisor: A. Považanová
- Putala, Lukáš: *Search Resources in Unstructured P2P Networks*. Supervisor: P. Lacko
- Roštár, Roman: *The Impact of Stress on a Biometric Characteristics User Model*. Supervisor: D. Chudá
- Segeč, Michal: *Characteristics of Small World Network*. Supervisor: G. Kosková
- Slaviček, Juraj: *Innovative Application within the International Competition*. Supervisor: J. Šimko
- Smoleňák, Milan: *The Recommendation Based on Personal Statement of the User*. Supervisor: P. Návrat
- Susko, Michal: *Named Entity Extraction from Texts and Merging Inflected Forms of Named Entities*. Supervisor: M. Laclavík
- Svrček, Martin: *Collaborative Learning Content Enrichment*. Supervisor: M. Šimko
- Sýkora, Tomáš: *Multidimensional View of Model in UML*. Supervisor: I. Polášek
- Szakál, Martin: *Road Network as a Complex Graph*. Supervisor: A. Bou Ezzeddine
- Šárik, Slavomír: *Creation of Database Queries in Native Language*. Supervisor: P. Lacko
- Šimek, Juraj: *Generating of DNA Sequences*. Supervisor: G. Kosková
- Šmihla, Štefan: *An Impact of User's Biometric Characteristics for Authentication in Smartphone Platform*. Supervisor: D. Chudá
- Šustek, Martin: *Framework for Creation of Scalable Web Applications*. Supervisor: A. Paulovič
- Tamajka, Martin: *Innovative Application within an International Competition*. Supervisor: J. Šimko
- Truchan, Peter: *Personalized Expert Recommendation System*. Supervisor: P. Návrat
- Uderman, Daniel: *MPI Parallel Implementation of the Supply Problem with Use of ACO*. Supervisor: M. Lucká
- Vestenický, Tomáš: *Supporting Query Formulation*. Supervisor: R. Móro
- Vnenk, Ľubomír: *Context-aware Information Space Browsing*. Supervisor: M. Bielíková

Master Theses – graduates 2014*Study Programme Information Systems*

- Balucha, Anton: *Using Clustering Algorithms in the Process of Searching Relevant Information*. Supervisor: A. Bou Ezzeddine
- Blaho, Tomáš: *Analysis of Complex Networks*. Supervisor: M. Nehéz
- Boleček, Tomáš: *Simulated Robotic Soccer Player*. Supervisor: I. Kapustík
- Borga, Peter: *Information Retrieval Based on Personal Profiles*. Supervisor: A. Považanová
- Grman, Ondrej: *Determining the Number of Clusters*. Supervisor: G. Kosková
- Lóderer, Marek: *Discovering Hidden Relationships in Digital Libraries*. Supervisor: N. Andrejčíková
- Ogurčák, Filip: *Research of New Methods for Processing and Managing Email Communications*. Supervisor: M. Laclavík
- Roško, Bohuš: *Evaluating the Results of Clustering*. Supervisor: G. Kosková
- Roško, Michal: *Semantic Processing in Digital Libraries*. Supervisor: V. Rozinajová
- Sámela, Richard: *Personalized Search in Source Code*. Supervisor: E. Kuric
- Sopko, Pavol: *News Article Recommendation Method Taking External User Context into Account*. Supervisor: M. Barla
- Šinský, Peter: *Using Complex Event Processing to Detect Plagiarism*. Supervisor: J. Lang
- Tuška, Marek: *The Application of Conceptual Model FRBRoo in Integration of Bibliographic Systems*. Supervisor: N. Andrejčíková
- Ujhelyiová, Zuzana: *Methods for Exploration and Navigation in Research Papers*. Supervisor: J. Tvarožek

Study Programme Software Engineering

- Adda, Michal: *Automated Antipattern Detection in Source Code*. Supervisor: I. Polášek
- Arpáš, Jozef: *Discovering Hidden Relationships of Research and Science in Bibliographic Records*. Supervisor: N. Andrejčíková
- Bado, Dávid: *Possibilities of Combination of Design Patterns in SOA*. Supervisor: R. Šelmeci
- Bohunická, Ivana: *User's Model for User Emotional State Identification*. Supervisor: D. Chudá
- Bystrický, Michal: *Consolidation of Intention in Source Code*. Supervisor: V. Vranić
- Caban, Tomáš: *Detection of Programmer's Task Context Boundaries in Programming*. Supervisor: T. Kramár

- Demovič, Ľuboš: *Using Linked Data on the Web to Enrich Context with New Information*. Supervisor: M. Holub
- Dorner, Michal: *Optimization of Processing Large Data Sets in Grid*. Supervisor: P. Lacko
- Dulačka, Peter: *Game with a Purpose as a Mean for Metadata Acquisition and Authority Discovery*. Supervisor: J. Šimko
- Fritscher, Eduard: *Group Recommendation of Multimedia Content*. Supervisor: M. Kompan
- Gajdoš, Jozef: *Identification of Paraphrasing in Text Documents*. Supervisor: T. Kučečka
- Granec, Michal: *Creating Software Product Lines from Existing Products*. Supervisor: V. Vranič
- Grega, Jaroslav: *Robocup 3D - Lower Skills Players*. Supervisor: M. Lekavý
- Gregor, Martin: *Facilitating Learning on the Web*. Supervisor: M. Šimko
- Greguš, Peter: *Automated Topics Identifying in Source Code*. Supervisor: I. Polášek
- Greppel, Ján: *Retaining Use Cases at Source Code Level*. Supervisor: V. Vranič
- Hudák, Miroslav: *User Model for Identification*. Supervisor: D. Chudá
- Hula, Igor: *Agent-based Modelling and Simulation of Evacuation of People in Interior*. Supervisor: I. Budinská
- Chylik, Michal: *Exploring the Linked Data Space on the Web*. Supervisor: M. Holub
- Igaz, Michal: *Topic Detection of Documents*. Supervisor: V. Rozinajová
- Ivanec, Peter: *Similarity Measure of Text Documents (strings)*. Supervisor: T. Kučečka
- Jendek, Tomáš: *Intelligent Identity Management Processing*. Supervisor: R. Semančík
- Kasala, Štefan: *Use of Biologically Inspired Algorithms for DNA Assembly*. Supervisor: A. Bou Ezzeddine
- Kaššák, Ondrej: *Group Recommendation for Smart TV*. Supervisor: M. Kompan
- Kollár, Adrián: *Document Clustering Optimization*. Supervisor: M. Lucká
- Konôpka, Martin: *Software Metrics Based on Developer's Activity and Context of Software Development*. Supervisor: M. Bielíková
- Kostolanský, Juraj: *Analysis of Source Code Evolution Using Abstract Syntax Tree*. Supervisor: P. Lacko
- Košícký, Martin: *Robocup 3D - Low Level Abilities of Player*. Supervisor: M. Lekavý
- Kříž, Jakub: *Context-based Improvement of Search Results in Programming Domain*. Supervisor: T. Kramár
- Kucsera, Viktor: *Parallel Methods of Image Segmentation by Using Ant Colony Optimization*. Supervisor: M. Lucká

- Kyžňanský, Michal: *Using Biologically Inspired Approaches to Clustering*. Supervisor: G. Kosková
- Láni, Marek: *Acquisition and Determination of Correctness of Answers in Educational System Using Crowdsourcing*. Supervisor: J. Šimko
- Lekeň, Tomáš: *Automated Planning in E-tourism*. Supervisor: M. Lekavý
- Lipták, Martin: *Researcher Modelling in Personalized Digital Library*. Supervisor: M. Bielíková
- Loch, Lukáš: *Responder Software Solution Employing Search Engine*. Supervisor: P. Návrat
- Martinkovič, Milan: *DNA Fragment Assembly by Using of Biologically Inspired Algorithms*. Supervisor: A. Bou Ezzeddine
- Mešťaník, Pavol: *Robocup 3D Simulation League – Lower Skills of Player*. Supervisor: M. Lekavý
- Mihalik, Matej: *Publishing Bibliographic Data on the Semantic Web*. Supervisor: N. Andrejčíková
- Michalko, Matúš: *Information Retrieval and Navigation in Heterogeneous RDF Graph*. Supervisor: M. Líška
- Palát, Peter: *Automatic Detector of Code Smells and Design Antipatterns*. Supervisor: I. Polášek
- Plank, Martin: *Extracting of Collocations on the Web*. Supervisor: M. Šimko
- Proksa, Ondrej: *Discovering Identity Links Between Entities on the Semantic Web*. Supervisor: M. Holub
- Račko, Michal: *Automatic Web Content Enrichment Using Parallel Web Browsing*. Supervisor: M. Labaj
- Škoda, Matej: *Three-dimensional Visualization of UML Diagrams*. Supervisor: I. Polášek
- Šteňová, Andrea: *Browsing Information Tags Space*. Supervisor: K. Rástočný
- Šurek, Marek: *Semantic Search Engine*. Supervisor: M. Líška
- Tomlein, Matúš: *Modelling the Dynamics of Web Content*. Supervisor: J. Tvarožek
- Ujhelyi, Matúš: *Task Scheduling in Distributed Computational System*. Supervisor: P. Lacko
- Urbančok, Maroš: *Mobile Phone as a Smart Remote Controller for 3D Space*. Supervisor: A. Kovárová
- Vandlíková, Diana: *Natural Language Question Answering Machine*. Supervisor: P. Návrat
- Višňovský, Juraj: *Context-aware Recommender Systems Evaluation*. Supervisor: D. Zeleník
- Zboja, Tomáš: *Schema Representation in Identity Management*. Supervisor: P. Mederly

Doctoral (PhD.) Theses

- Student name:* Michal Kompan
Degree program: Software Engineering
Thesis title: *Group and Single-user Influence Modeling for Personalized Recommendation*
Supervisor: Mária Bieliková, Professor
Defended on: January 29, 2014
Annotation: Plenty of our daily activities have a social character, in other words a group of users instead of the single performs them. In order to provide recommendations for these activities we should construct group recommendations, which combine group members' preference and produces one list of recommended items for the whole group. In this thesis, we focus on recommendation approaches for a group as a unit. We discuss group recommendation characteristics as group size, group homogeneity etc. from the recommendation influence point of view. We analyze several approaches for group modeling as single recommendations aggregation, user's preference aggregation or group model construction. We focus on improving the group recommendation approaches by considering various aspects of recommendation and users; we also explore specific domains application, namely low activity domains, educational learning and movie recommendation.
- Student name:* Tomáš Kramár
Degree program: Software Engineering
Thesis title: *Utilizing Lightweight Semantics for Search Context Acquisition in Personalized Search*
Supervisor: Mária Bieliková, Professor
Defended on: January 29, 2014
Annotation: In order to answer a query, the search engine has to find full-text matches in the background document corpus and then rank them so that the more relevant results are placed higher in the list. An ideal ranking function should understand user's intent – the goal that is expressed via the query keywords, and order the results such that the results matching user's intent are ranked higher. To understand the user's intent, we need to understand the semantics of the queries and the documents. There are various approaches that leverage semantics, but they are heavy-weight, require external knowledge bases and are very hard to implement in a highly dynamic, open corpus domain, such as the Web. In our work, we focus on the omnipresent lightweight semantics coming from the search result documents. We propose a flexible metadata-based context model and propose methods that scope it to the short-term interests or expand it with additional data. We identify and experiment with several sources of search context: temporal context in form of behavioral search patterns, activity-based context in form of past queries and social context in form of user similarity.

Student name: Dušan Zeleník
Degree program: Software Engineering
Thesis title: *Reducing the Sparsity of Contextual Information for Recommendation*
Supervisor: Mária Bieliková, Professor
Defended on: February 21, 2014
Annotation: In order to make recommendation more precise in various systems we focus on contextual information as another aspect of information space. A context could be used for estimation of item relevance which are subject to further recommendation. However, it is often not trivial to obtain information on context. Users are not willing to share this information (socio-demographic, location) or we simply have no possibilities to collect it (mental condition or physical health). We proposed a method of context inference by analyzing information which is available for individual users. We use techniques of machine learning and evaluate results in real environment with information gathered by monitoring real users in several domains (news reading, social network, movie ratings).

9.4 IIT.SRC Students' Papers

Full papers

- Bohunická, Ivana: *User's Model Characteristics Relevancy and Weight for User Emotions Identification*. Supervisor: D.Chudá
- Brza, Tomáš: *Student Motivation in Interactive Online Learning*. Supervisor: J. Tvarožek
- Bystrický, Michal: *Implementing the Control Flow Pointcut in Python*. Supervisor: V. Vranić
- Caban, Tomáš: *Detection of Developer's Task Context Boundaries in Programming*. Supervisor: T. Kramár
- Demovič, Ľuboš: *Linking Slovak Entities from Educational Materials with English Dbpedia*. Supervisor: M. Holub
- Dorner, Michal: *Enhancing MapReduce Using Hash Tables and Optimized Data Exchange*. Supervisor: P. Lacko
- Dulačka, Peter: *Finding and Utilizing Experts in Crowdsourcing Game*. Supervisor: J. Šimko
- Filipčík, Richard: *Dynamic Score as a Mean for Motivation of Students in an Educational System*. Supervisor: M. Bieliková
- Gajdoš, Jozef: *Identification of Higher Paraphrasing in Slovak Language*. Supervisor: T. Kučečka
- Gregor, Martin: *Facilitating Learning on the Web*. Supervisor: M. Šimko
- Harsányi, Zoltán: *Identifying Author Profiles Using Citation Based Techniques*. Supervisor: V. Rozinajová
- Chylik, Michal: *Using Linked Data for Exploratory Search in Digital Libraries*. Supervisor: M. Holub

- Kasala, Štefan: *Use of Biologically Inspired Algorithms for DNA Assembly*. Supervisor: A. Bou Ezzeddine
- Kaššák, Ondrej: *Weighted Vector User Model for Movie Recommendation*. Supervisor: M. Kompan
- Kazičková, Terézia: *Knowledge Sharing by Means of Graph-based Diagrams on Web*. Supervisor: I. Srba
- Kloska, Matej: *Enhancing Keyword Map Visualisation for Educational Content Management*. Supervisor: M. Šimko
- Kollár, Adrián: *A Comparison of Traditional and Swarm Based Clustering*. Supervisor: M. Lucká
- Kompas, Šimon: *Characteristics of Small World Networks*. Supervisor: G. Kosková
- Konôpka, Martin: *Aspect-oriented Solution to Platform-specific Implementations in Cross-Platform Application Development*. Supervisor: V. Vranič
- Konôpka, Martin: *Identifying Hidden Source Code Dependencies from Developer's Activity*. Supervisor: M. Bieliková
- Kostolanský, Juraj: *Analysis of Source Code Evolution Using Abstract Syntax Tree*. Supervisor: P. Lacko
- Krátky, Peter: *Patterns in Browsing the Web: Distinguishing Computer Mouse Usage Characteristics*. Supervisor: D. Chudá
- Kříž, Jakub: *Extracting Contextual Metadata in Programming Domain*. Supervisor: T. Kramár
- Kuric, Eduard: *Estimation of Programmer's Karma Based on Programming Tasks*. Supervisor: M. Bieliková
- Kyžňanský, Michal: *Crowd Evacuation Simulation in Interior Areas*. Supervisor: P. Lacko
- Kyžňanský, Michal: *Biologically Inspired Approaches Used in Clustering*. Supervisor: G. Kosková
- Kubán, Peter: *DNA Assembly: Reducing K-mers Number, Unique and Erroneous K-mers Detection*. Supervisor: M. Lucká
- Labaj, Martin: *Users' Web Browsing Behaviour inside and outside a TEL System*. Supervisor: M. Bieliková
- Láni, Marek: *Crowd-powered Evaluation Exercise*. Supervisor: J. Šimko
- Loebel, Jaroslav: *Word Sense Disambiguation Targeting Slovak Language*. Supervisor: M. Šimko
- Lovasová, Viktória: *Recommendation Based on Parallel Browsing*. Supervisor: M. Labaj
- Markovič, Lukáš: *Refactoring Support Using XSLT Transformations*. Supervisor: I. Polášek
- Martinkovič, Milan: *DNA Fragment Assembly by Using of Mosquito Host Seeking Algorithm*. Supervisor: A. Bou Ezzeddine

-
- Mazán, Filip: *Presentation of Snippets in Web Summarizers*.
Supervisor: J. Tvarožek
 - Michalko, Matúš: *Information Retrieval and Navigation in Heterogeneous RDF Graph*. Supervisors: M. Líška, M. Šimko
 - Mikle, Filip – Minárik, Matej – Slaviček, Juraj – Tamajka, Martin: *Low-Cost Acquisition of 3D Interior Models for Online Browsing*. Supervisor: J. Šimko
 - Móro, Róbert: *Influence of Navigation Leads' Visualization on Digital Libraries Exploration*. Supervisor: M. Bielíková
 - Paulovič, Aurel: *Building Distributed Transactional Memory using CRDT*.
Supervisor: P. Návrat
 - Plank, Martin: *Collocation Extraction on the Web*. Supervisor: M. Šimko
 - Proksa, Ondrej: *Discovering Identity Links between Entities on the Semantic Web*.
Supervisor: M. Holub
 - Putala, Lukáš: *Search Resources in Unstructured Peer-to-Peer Networks*.
Supervisor: P. Lacko
 - Račko, Michal: *Automatic Web Content Enrichment Using Parallel Web Browsing*.
Supervisor: M. Labaj
 - Rástočný, Karol: *Empirical Metadata Maintenance in Source Code Development Process*. Supervisor: M. Bielíková
 - Srba, Ivan: *Knowledge Acquisition in Community Question Answering*.
Supervisor: M. Bielíková
 - Svrček, Martin: *Collaborative Enrichment of Learning Content*.
Supervisor: M. Šimko
 - Šajgalík, Mária: *Exploring Multidimensional Continuous Feature Space to Extract Relevant Words*. Supervisor: M. Bielíková
 - Ševcech, Jakub: *User's Interest Detection through Eye Tracking for Related Document Retrieval*. Supervisor: M. Bielíková
 - Šimek, Juraj: *Random DNA Read Generator*. Supervisor: G. Kosková
 - Šinský, Peter: *Using Complex Event Processing to Detect Plagiarism*.
Supervisor: J. Lang
 - Šmihla, Štefan: *Authentication on Smartphone Using Keystroke Dynamics Together with Hardware Sensors*. Supervisor: D. Chudá
 - Šurek, Marek: *General Language Interface for Adaptable Semantic Search Engine*.
Supervisor: M. Líška
 - Tomlein, Matúš: *Method for Novelty Recommendation Using Topic Modelling*.
Supervisor: J. Tvarožek
 - Truchan, Peter: *Personalized Expert Food Recommendation System*.
Supervisor: P. Návrat
 - Ujhelyi, Matúš: *Task Scheduling in Distributed Computational System*.
Supervisor: P. Lacko

- Ujhelyiová, Zuzana: *Method for Navigation in Research Papers with User's Preferences*. Supervisor: J. Tvarožek
- Urbančok, Maroš: *Smartphone versus Mouse with Keyboard Interaction within Virtual Reality*. Supervisor: A. Kovárová
- Višňovský, Juraj: *Evaluating Context-aware Recommendation Systems*. Supervisor: D. Zeleník
- Vnenk, Lubomír: *Activity Context-aware Personalized Search*. Supervisor: M. Bielíková

Extended abstracts

- Bystrický, Michal: *An Approach to Capturing Intention in Source Code*. Supervisor: V. Vranič
- Fritscher, Eduard: *Group Recommendation of Multimedia Content*. Supervisor: M. Kompan
- Granec, Michal: *Towards Feature-oriented Software Development with Design Features*. Supervisor: V. Vranič
- Greppel, Ján: *Retaining Use Cases at Source Code Level*. Supervisor: V. Vranič
- Podlucká, Jana: *Evaluation of Source Code Quality*. Supervisor: D. Zeleník
- Škoda, Matej: *Three-dimensional Visualization of UML Diagrams*. Supervisor: I. Polášek
- Zboja, Tomáš: *Textual Representation of Data Models in Identity Management*. Supervisor: P. Mederly

TP CUP Competition

- Brndiarová, Gabriela – Martoš, Ivan – Štajer, Andrej – Štetiar, Matej – Šuta, Erik – Valko, Andrej: *Three-dimensional UML*. Supervisor: I. Polášek
- Bucko, Jaroslav – Čársky, Matej – Jurkovič, Peter – Kebísek, Ján – Kuruc, Marián – Maruna, Viktor – Vangel, Máté: *EIVA: Efficient Interactive Video Annotation*. Supervisor: J. Šimko
- Cáder, Lukáš – Dušek, Martin – Dzurilla, Jaroslav – Gáspár, Roland – Londák, Martin – Ševčík, Michal – Toma, Matej: *A Mobile Application for Quick Information Retrieval Associated with a Building*. Supervisor: A. Kovárová
- Červeňová, Dominika – Daráž, Jakub – Gregorovič, Lukáš – Janík, Martin – Kocian, Róbert – Mészáros, Michal – Mišíková, Kristína: *Gaze Tracking for Usability Testing of Dynamic Web Applications*. Supervisor: R. Móra
- Dobšovič, Rastislav – Grznár, Marek – Harínek, Jozef – Molnár, Samuel – Páleník, Peter – Poizl, Dušan – Zbell, Pavol: *Askalot: An Educational Community Question Answering System*. Supervisor: I. Srba
- Gloger, Michael – Jánošík, Tomáš – Klíč, Daniel – Kompas, Šimon – Kostrab, Rastislav – Kubica, Stanislav: *Automated Acquisition and Standardization of Citations*. Supervisor: N. Andrejčíková

- Juranyi, Michal – Podmajerský, Ján – Košdy, Ivan – Marcin, Jozef – Martinkovič, Tomáš – Rabčan, Juraj – Noga, Matej: *IDEM Programmer's Monitor*. Supervisor: D. Chudá
- Kepič, Tomáš – Oriskó, Patrik – Scholtz, Michael – Skrisa, Július – Samuhel, Patrik – Chlebana, Matej – Grešlíková, Zuzana: *CodeReview: Organizing and Reviewing Software Projects*. Supervisor: K. Rástočný
- Toma, Martin – Štrba, Patrik – Bednárík, Filip – Černý, Róbert – Vojtuš, Miroslav – Lenčేశ, Marek – Molnár, Miroslav: *PINTA.SK - Feedback Providing Community*. Supervisor: D. Zeleník
- Vincúr, Juraj – Petrik, Juraj – Pidanič, Pavol – Kalmár, Ján – Jurčák, Ondrej – Zápach, Radoslav – Tibenský, Martin: *FIIT Grid – Distributed Computing Network*. Supervisor: P. Lacko

9.5 Research Laboratories

Intelligent Systems Laboratory

Manager: P. Návrát

Contact: pavol.navrat@stuba.sk

Description: The laboratory is used for research of a wide spectrum of problems that fall into the field of program and information systems mainly in the scope of artificial intelligence. The projects solved are concerned with the methods of knowledge system development with a special focus on multi-agent systems and their collaboration, as well as intelligent search, delivery, and presentation of heterogeneous information in a distributed environment such as Internet, including categorisation and recommendation of the information. The laboratory is equipped with fairly powerful computer systems and advanced software tools that correspond to the demands of the projects being solved. The equipment is regularly renewed thanks mainly to continuous success in grants including international ones.

Advanced Software and Web Technologies Laboratory

Manager: M. Bieliková

Contact: maria.bielikova@stuba.sk

Description: The laboratory is used for research of a wide spectrum of problems that fall into the field of program and information systems mainly in the scope of software engineering. The projects being solved were concerned with the methods and tools of software system development with a special focus on the structure design of component-based and structure and presentation design of hypermedia systems. The laboratory is used also for research projects in the field of advanced software technologies for master degree students. The laboratory is equipped with fairly powerful computer systems and advanced CASE tools. The equipment is regularly renewed thanks mainly to continuous success in grants including international ones.

9.6 Research Projects

Contextual Information Search and Navigation in the Social Web (VEGA, 1/0675/11)

Project leader: M. Bieliková

Members UIIS: M. Barla, M. Holub, I. Kapustík, M. Kompan, T. Kramár, E. Kuric, P. Lacko, R. Móro, M. Labaj, K. Rástočný, V. Rozinajová, I. Srba, M. Šajgalík, J. Šimko, M. Šimko, J. Tvarožek, V. Vranić, D. Zeleník

Supported by: Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences

Duration: January 2011 – December 2014

Description: Considering today's information overload, caused by mass and dynamics of the accessible information, effective information search and navigation becomes an important and crucial task during activities with information needs. Project focuses on research of methods and techniques for information searching and navigation and on ways of their realization in the milieu of adaptive and social web with semantics with regard to problem-related software architectures (esp. service oriented architectures) methods of distributed processing of extensive data sources and to model-driven development of software including post-object paradigms.

Intelligent Analysis of Big Data by Semantic-oriented and Bio-inspired Methods in a Parallel Environment (VEGA, 1/0752/14)

Project leader: P. Návrat

Members UIIS: M. Barla, A. Bou Ezzeddine, Z. Harsányi, D. Chudá, I. Kapustík, G. Kosková, A. Kovárová, E. Kuric, M. Labaj, P. Lacko, M. Lekavý, M. Lucká, A. Paulovič, Š. Sabo, I. Srba, M. Šimko, J. Tvarožek

Supported by: Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences

Duration: January 2014 – December 2017

Description: The currently used methods of data analysis, extraction, data mining and automated support for domain modeling can no longer effectively support the processing of nowadays commonly available datasets, which arise in every field of human activity. One of the advantages of the work with large datasets is the potential to acquire often better or even completely new results of the data processing, e.g. finding new patterns, obtaining more accurate results or achieving greater statistical significance. In this project we will focus on intelligent analysis of large bodies of medical data as well as modeling of big data available on the Internet. We will focus on the area of DNA sequencing and pattern extraction from medical imaging. Another source of data will be the actual content of the Web, user access logs and records of user preferences. To support the processing of such large datasets we will study the potential of parallel and distributed computing models and new approaches to software design.

Acquiring, Processing and Visualization of Textual Information Based on Analysis of Similarity Relations (VEGA, 1/0971/11)

Project leader: D. Chudá

Members UIIS: N. Andrejčíková, M. Bieliková, A. Bou Ezzeddine, P. Kajsa, G. Kosková, A. Kovárová, T. Kučečka, J. Lang, P. Mederly, R. Móro, A. Paulovič, I. Polášek, Š. Sabo, M. Šajgalík

Supported by: Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences

Duration: January 2011 – December 2014

Description: Web data acquisition is a highly topical task and despite several well-known methods, users struggle with poor quality (accuracy, relevance, and coverage) responses. The problem is to find methods to obtain relevant information on an issue that has a dynamic character, i.e. evolves over time. Acquired documents can be mined for more information. In particular, new approaches (neural networks, swarm intelligence) are being researched. Attention is drawn to methods which process Slovak texts. Recommendations of relevant or interesting information are studied together with non-standard versions of similarity. Relationships between the versions, originality, authorship, and originality are being evaluated. Methods take into account that the user can be a part of social networks. The proposed methods will be used in various systems of information processing including e-learning. Software structures which support interoperability of such systems and composition of provided services are being designed.

Advanced Methods in Software Evolution: Variants, Composition, and Integration (VEGA, 1/1221/12)

Project leader: V. Vranič

Members UIIS: Z. Harsányi, P. Kajsa, M. Kasan, J. Lang, P. Mederly, P. Návrat, I. Polášek, V. Rozinajová, R. Šelmeci

Supported by: Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences

Duration: January 2012 – December 2015

Description: Software evolution embraces initial software development and its recurring modifications. What is characteristic for software evolution is an emphasis on maintenance, the longest phase in software development life cycle. Sometimes, the whole software development process can be perceived as maintenance because the development of what is considered as a new software is most often based on the existing code or models. Software maintenance can be perceived as naturally agile: oriented on the product and customer. The project aims at the research of advanced methods in software evolution both at the programming and modeling level. A special attention is paid to the use of advanced composition mechanisms and explicit and early dealing with variability. Specific project objectives include the support of aspect-oriented (AO) change realization process, using AO approaches to deal with variability, proposal of advanced approaches to integration and composition, and using AO approach in information content modeling.

Virtual Learning Software Lab for Collaborative Task Solving (KEGA, 009STU-4/2014)

- Project leader:* M. Bieliková
- Members UIIS:* M. Barla, M. Labaj, R. Móro, V. Rozinajová, I. Srba, J. Šimko, M. Šimko, D. Zeleník
- Supported by:* Cultural and Educational Grant Agency of the Slovak Republic
- Duration:* January 2014 – December 2016
- Description:* Interaction and collaboration between students and teacher and among students themselves are important elements of the learning process. Presently, the support for collaboration in learning is limited to standard communication tools such as discussion and to only some environments. The goal of the project is to extend an existing software platform for learning support with features for interaction and collaboration at the level of learning materials, task solving or question answering. The platform will not only support enhancements of learning process such as social dimension, interaction and collaboration with active features attached to learning materials (annotation of learning materials, question creation, search and evaluation of external resources suitable for learning), but will also enable working with selected features on portable devices, especially tablets, which will enable more intensive collaboration, especially among students themselves. The interaction and collaboration represent important parts of student motivation and tools for increasing interest of students in learning, which is nowadays a key aspect considering the overload of information and resources available in individual knowledge domains. We will evaluate the platform using existing learning materials in the domain of programming, which we will extend by new materials from the domain of software engineering, by which we will fill the gap in the area of information technology education. Currently, the existing materials serve as static documents in web-based system. We will design and elaborate collaborative web-based tools, which will enable students to contribute to (learning) content and collaborate during task solving (either among themselves or between them and the teacher). We will thus create a virtual learning lab, available anywhere, anytime. We will create new tools and will adapt selected tools to be available for mobile platforms. The mobile devices will fully enable the use of modern technologies and will bring the learning materials closer to student, which will further enhance his motivation to use the virtual lab during his learning sessions. The outcome of the project is intended for broader use, also for different learning materials and variety of schools.

Virtual and Constructive Modelling, Training and Simulation of Crowd Behaviour in Urban Environment (APVV-0233-10)

- Project leader:* P. Lacko for FIIT STU
- Members UIIS:* I. Kapustík, M. Labaj, J. Lang, A. Paulovič, K. Rástočný, V. Vranič
- Supported by:* Slovak Research and Development Agency
- Duration:* May 2011 – October 2014

Description: Project objective is to develop a virtual training and simulation environment for the training and multi-agent simulation of security forces and crowds in urban environment. Users will be able to create new or adapt the existing models of human behaviour in line with the latest findings of psychology and sociology. Project is aimed to enhance the safety at public events by the realistic simulation of the employment of modern equipment Božena-Riot meant for crowd management and riot control (primarily by the police, but also by the army), which is developed and produced in Slovakia by the project partner Way Industries. Though the primary application area is security and crowd-management, the mul-agent simulation components are universal and can also be used in educational, economical, sociological or epidemiological modelling.

Cognitive Traveling in Digital Space of the Web and Digital Libraries Supported by Personalized Services and Social Networks (APVV-0208-10)

Project leader: P. Návrat

Members UIIS: N. Andrejčíková, M. Barla, M. Bieliková, A. Bou Ezzeddine, Z. Harsányi, M. Holub, D. Chudá, M. Kompan, T. Kramár, G. Kosková, A. Kovárová, E. Kuric, R. Móro, V. Rozinajová, Š. Sabo, I. Srba, M. Šajgalík, J. Ševcech, J. Šimko, M. Šimko, J. Tvarožek, D. Zeleník

Supported by: Slovak Research and Development Agency

Duration: May 2011 – October 2014

Description: Analyzing new phenomena connected with using web and digital libraries (esp. social networking) to improve information acquisition. Devising and verifying: - new models of information domains, documents and users facilitating expressing and working with at least partial descriptions of their semantics - new methods of targeted and exploratory information search that take into account personalization, common interests of different groups, suitable presentation and visualization.

Future Education and Training in Computing: How to Support Learning at Anytime Anywhere (539461-LLP-1-2013-1-BG-ERASMUS-ENW)

Project leader: D. Chudá

Members UIIS: M. Barla, J. Lang, P. Návrat, J. Tvarožek

Supported by: Lifelong Learning Programme

Duration: October 2013 – September 2016

Description: The main objectives of this proposal is to introduce innovative technologies in education, develop an integrated environment for computing education, which includes curricula, syllabi, e-learning, resources, student exhibition forums, which will significantly raise education quality. It will also propose a set of recommendations for future Digital Curricula in Computing Education and Training 2020 and will develop new didactical theories and learning models for using social media in education. The project involves 67 partners from 35 countries. All of them are active players in the field of Computing Education. Representatives of these partners will work on the re-

organisation of the teaching process by changing teaching methods, developing new didactical theories and learning models for using social media in education and new Digital Curricula in Computing Education and Training. This will strengthen and further develop the European Higher Education Area in Computing.

Support of Building a Center of Excellence for Smart Technologies, Systems, and Services II (ITMS 26240120029)

Project leader: M. Bielíková for FIIT STU
Members UIIS: P. Návrát
Supported by: European Structural Fund
Duration: January 2010 – June 2014
Description: The objective is to improve, build further, and put into operation the technological infrastructure that would enable to sustain the center of excellence of research and development for enterprise information source processing and presentation with the application of advanced distributed architectures for parallel processing of extensive sources of semistructured data and high performance computing for complex applications.

International Center of Excellence for Research on Intelligent and Secure Information and Communications Technologies and Systems (ITMS 26240120039)

Project leader: V. Rozinajová for FIIT STU
Supported by: European Structural Fund
Duration: February 2014 – November 2015
Description: The goal of the project is to establish a research centre focused on basic research in energy domain, Big Data and CyberSecurity. Our part of the project is to provide an overview of the current state and research challenges in Big Data area and to propose solutions to particular tasks of Big Data processing. The topics of interest cover specific parts of the data value chain, such as data acquisition, data quality, data analytics with special focus on predictive modeling and data visualization. The models are investigated in the domain of power engineering, as huge amount of data is daily generated from smart meters and smart grid environment. In order to deliver real value from these data new analytic models are needed.

Research of Methods for Acquisition, Analysis and Personalized Conveying of Information and Knowledge (ITMS: 26240220039)

Project leader: M. Bielíková for FIIT STU
Members UIIS: M. Barla, M. Bielíková, A. Bou Ezzeddine, D. Chudá, M. Holub, M. Kompan, G. Kosková, T. Kramár, T. Kučečka, P. Lacko, P. Mederly, P. Návrát, I. Polášek, V. Rozinajová, J. Suchal, R. Šelmeci, J. Šimko, M. Šimko, J. Tvarožek, M. Tvarožek, V. Vranić, D. Zeleník
Supported by: European Structural Fund
Duration: January 2011 – September 2015
Description: The purpose of the project is to develop new methods of acquisition, search, and recommendation of information and knowledge. The need

for such methods comes from a huge range of the data available in different domains when their manual search for a human is not possible. Contemporary methods have enabled a remarkable move in this field, but they still do not enable to effective information providing so that this would include the context: the user, his or her goals, properties, and capabilities, as well as parameters of the environment in which information processing takes part (time, place, and technical resources).

9.7 Publications

Journals

- BOU EZZEDDINE, A. - KASALA, Š. - NÁVRAT, P.: Applying the Firefly Approach to the DNA Fragments Assembly Problem. In: *Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös Nominatae Sectio Computatorica*. Vol. 42, 2014, ISSN 0138-9491. pp. 69-81.
- KOMPAN, M. - BIELIKOVÁ, M.: Group Recommendations: Survey and Perspectives. In: *Computing and Informatics*. Vol. 33, No. 2 (2014), ISSN 1335-9150. pp. 446-476.
- KORENEK, P. - ŠIMKO, M.: Sentiment Analysis on Microblog Utilizing Appraisal Theory. In: *World Wide Web*. Vol. 17, Iss. 4., 2014, ISSN 1573-1413. pp. 847-867.
- RÁSTOČNÝ, K. - FRANEKOVÁ, M. - ZOLOTOVÁ, I. - RÁSTOČNÝ, K.: Quantitative Assessment of Safety Integrity Level of Message Transmission between Safety-related Equipment. In: *Computing and Informatics*. Vol. 33, No. 2 (2014), ISSN 1335-9150. pp. 343-368.
- ŠEVCECH, J. - MÓRO, R. - HOLUB, M. - BIELIKOVÁ, M.: User Annotations as a Context for Related Document Search on the Web and Digital Libraries. In: *Informatica*. Vol. 38, No. 1 (2014), ISSN 0350-5596. pp. 21-30.

International Conferences

- BIELIKOVÁ, M. - POLÁŠEK, I. - BARLA, M. - KURIC, E. - RÁSTOČNÝ, K. - TVAROŽEK, J. - LACKO, P.: Platform Independent Software Development Monitoring: Design of an Architecture. In: *LNCS 8327. SOFSEM 2014. Theory and Practice of Computer Science. 40th International Conference on Current Trends in Theory and Practice of Computer Science*. Nový Smokovec, Slovak Republic, Cham : Springer, 2014. pp. 126-137.
- FILIPČÍK, R. - BIELIKOVÁ, M.: Motivating Learners by Dynamic Score and Personalized Acitivity Stream. In: *SMAP 2014. 9th International Workshop on Semantic and Social Media Adaptation and Personalization*. Corfu, Greece. Los Alamitos : IEEE, 2014. pp. 20-25.
- KOMPAN, M. - BIELIKOVÁ, M.: Social Structure and Personality Enhanced Group Recommendation. In: *UMAP 2014 : EMPIRE 2014. 2nd Workshop on Emotions and Personality in Personalized Services*, Aalborg Denmark. Aachen : CEUR-WS, 2014, CEUR Workshop Proceedings; 1181. online, 6 p.
- KOMPAN, M. - BIELIKOVÁ, M.: Voting Based Group Recommendation: How Users Vote. In: *Hypertext 2014. Late-breaking Results, Doctoral Consortium and Workshop Proceedings of the 25th ACM Hypertext and Social Media Conference*. CEUR-WS, 2014, CEUR Workshop Proceedings; 1210. online, 2 p.

- KURIC, E. - BIELIKOVÁ, M.: Estimation of Student's Programming Expertise. In: *ESEM 2014*. 8th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement, Torino, Italy. New York : ACM, 2014, 4 p.
- KURIC, E. - BIELIKOVÁ, M.: Webification of Software Development: User Feedback for Developer's Modeling. In: *LNCS 8541*. Web Engineering, 14th International Conference ICWE 2014, Toulouse, France, Cham : Springer, 2014. pp. 550-553.
- KYŽŇANSKÝ, M. - LACKO, P.: Crowd Evacuation with Family Scenario Expansion. In: *SISY 2014*. IEEE 12th International Symposium on Intelligent Systems and Informatics, Subotica, Serbia, IEEE, 2014. pp. 263-266.
- LABAJ, M. - ŠIMKO, M. - TVAROŽEK, J. - BIELIKOVÁ, M.: Integrated Environment for Learning Programming. In: *LNCS 8719*. EC-TEL 2014, Open Learning and Teaching in Educational Communities; 9th European Conference on Technology Enhanced Learning, Graz, Austria. Cham : Springer, 2014. pp. 498-501.
- MÓRO, R. - BIELIKOVÁ, M. - BURGER, R.: Facet Tree for Personalized Web Documents Organization. In: *LNCS 8786*. WISE 2014. Web Information Systems Engineering. 15th International Conference, Thessaloniki, Greece, Cham : Springer, 2014. pp. 372-387.
- MÓRO, R. - DARÁŽ, J. - BIELIKOVÁ, M.: Visualization of Gaze Tracking Data for UX Testing on the Web. In: *Hypertext 2014*. Late-breaking Results, Doctoral Consortium and Workshop Proceedings of the 25th ACM Hypertext and Social Media Conference. CEUR-WS, 2014, 5 p. (Workshop proceedings; 1210) (<http://ceur-ws.org/Vol-1210/>)
- RÁSTOČNÝ, K. - BIELIKOVÁ, M.: Enriching Source Code by Empirical Metadata. In: *ESEM 2014*. 8th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement, Torino, Italy. New York : ACM, 2014. p. 1.
- ŠAJGALÍK, M. - BARLA, M. - BIELIKOVÁ, M.: Exploring Multidimensional Continuous Feature Space to Extract Relevant Words. In: *LNAI 8791*. Statistical Language and Speech Processing : Second International Conference, SLSP 2014, Grenoble, France, Cham : Springer, 2014. pp. 159-170.
- ŠEVCECH, J. - BIELIKOVÁ, M.: User's Interest Detection through Eye Tracking for Related Documents Retrieval. In: *SMAP 2014*. 9th International Workshop on Semantic and Social Media Adaptation and Personalization. Corfu, Greece. Los Alamitos : IEEE, 2014. pp. 9-13.
- UJHELYI, M. - LACKO, P. - PAULOVIČ, A.: Task Scheduling in Distributed Volunteer Computing Systems. In: *SISY 2014*. IEEE 12th International Symposium on Intelligent Systems and Informatics, Subotica, Serbia, IEEE, 2014. pp. 111-114.
- VIŠŇOVSKÝ, J. - KAŠŠÁK, O. - KOMPAN, M. - BIELIKOVÁ, M.: The Cold-Start Problem: Minimal User's Activity Estimation. In: *RecSysTV 2014*. 1st Workshop on Recommender Systems for Television and Online Video. Silicon Valley, USA. ACM, 2014, 4. p.
- VNENK, Ľ - BIELIKOVÁ, M.: Searcher's Activity in Standalone and Web Applications as a Source for Search Query Expansion. In: *ENIC 2014*. The First European Network Intelligence Conference, Wroclaw, Poland. IEEE, 2014. pp. 75-80.

Selected Local and National Conferences

- BIELIKOVÁ, M. - NÁVRAT, P. - BARLA, M. - POLÁŠEK, I. - CHUDÁ, D. - LACKO, P.: PerConIK: Applying Knowledge Technologies in the Domain of Software. In: *13th Conference Znalosti 2014*. Exhibition, education and Experts Networking, Jasná pod Chopkom, Slovak Republic, Praha : Nakladatelství Oeconomica, 2014, pp. 50-53. online (in Slovak) (<http://znalosti.eu/sbornik>).
- BIELIKOVÁ, M. - NÁVRAT, P. - TVAROŽEK, J. - BARLA, M. - ŠIMKO, J.: UC Lab and UX Class: Gaze Tracking with a Purpose of Supporting User Experience and Education. In: *13th Conference Znalosti 2014*. Exhibition, education and Experts Networking, Jasná pod Chopkom, Slovak. Praha : Nakladatelství Oeconomica, 2014. pp. 54-57. (in Slovak)
- BIELIKOVÁ, M. - BARLA, M. - POLÁŠEK, I.: Webification of Software Development: An Overview. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 3-9.
- HOLUB, M. - BIELIKOVÁ, M.: Building Slovak Knowledge Base Using Linked Data. In: *WIKT 2014*. 9th Workshop on Intelligent and Knowledge Oriented Technologies. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 63-67. (in Slovak)
- HOLUB, M. - KURIC, E. - BIELIKOVÁ, M.: Modeling the Experience of Software Developers Based on Lightweight Semantics. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 153-162.
- HOLUB, M.: Utilization of Linked Data in Domain Modeling Tasks. In: *Personalized Web - Science, Technologies and Engineering*. 15th Spring 2014 PeWe Workshop Gabčíkovo, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 25-26.
- KOMPAN, M. - ŠIMKO, J. - KAŠŠÁK, O. - BIELIKOVÁ, M.: Personalised Multimedia Management. In: *WIKT 2014*. 9th Workshop on Intelligent and Knowledge Oriented Technologies. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 68-71. (in Slovak)
- KONÔPKA, M. - BIELIKOVÁ, M.: Developer's Activities as a Source for Enriching Code Dependency Graph. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 129-132.
- KOSKOVÁ, G. - BOU EZZEDDINE, A. - LUCKÁ, M. - ROZINAJOVÁ, V. - LAURINEC, P.: Perspectives in Modelling and Prediction Big Data in Electricity Sector. In: *WIKT 2014*. 9th Workshop on Intelligent and Knowledge Oriented Technologies. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 57-62. (in Slovak)
- KOSTOLANSKÝ, J. - LACKO, P.: Analysis of Source Code Evolution. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 115-116.

- KOVÁROVÁ, A.: A Building as a Context for Multidomain Information Service? Case Study Virtual FIIT. In: *WIKT 2014. 9th Workshop on Intelligent and Knowledge Oriented Technologies*. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 72-77.
- KRAMÁR, T.: Extracting Metadata from Source Code. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 135-136.
- KRÁTKY, P. - CHUDÁ, D.: Searching for Patterns of Working with a Computer Mouse. In: *WIKT 2014. 9th Workshop on Intelligent and Knowledge Oriented Technologies*. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 115-120. (in Slovak)
- KRÁTKY, P.: User Identification Based On Standard Input Devices Usage. In: *Personalized Web - Science, Technologies and Engineering. 15th Spring 2014 PeWe Workshop Gabčíkovo*, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 11-12.
- KUBÁN, P. - LUCKÁ, M.: Parallel Assembly of Big DNA Data. In: *WIKT 2014. 9th Workshop on Intelligent and Knowledge Oriented Technologies*. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 136-141. (in Slovak)
- KURIC, E. - BIELIKOVÁ, M.: Estimation of Student's Programming Expertise. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 151-152.
- KURIC, E.: Modelling developer's expertise. In: *Personalized Web - Science, Technologies and Engineering. 15th Spring 2014 PeWe Workshop Gabčíkovo*, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 71-72.
- KURIC, E. - RÁSTOČNÝ, K. - BIELIKOVÁ, M.: Estimating Developer's Expertise to Prevent Errors in a Software Project. In: *WIKT 2014. 9th Workshop on Intelligent and Knowledge Oriented Technologies*. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 91-96. (in Slovak)
- KURIC, E.: Personalized Search in Source Code: A Survey. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 43-83.
- KURIC, E. - BIELIKOVÁ, M.: Programmer's Karma in Software House Environment. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 139-150.
- LABAJ, M.: Observing and Utilizing Tabbed Browsing Behaviour. In: *Personalized Web - Science, Technologies and Engineering. 15th Spring 2014 PeWe Workshop Gabčíkovo*, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 101-102. (in English)
- LACKO, P. - VINCÚR, J. - TIBENSKÝ, M. - PIDANIČ, P. - PETRÍK, J. - KALMÁR, J. - JURČÁK, O. - ZÁPACH, R.: BOINC@Fiit? Distributed Computing Network. In: *Datakon 2014. Proceedings of the 34th Annual Database Conference, Demänovská*

- dolina, Slovak republic, Ostrava : VŠB - Technická univerzita, 2014. pp. 121-127. (in Slovak)
- LANG, J. - CAPIK, Z.: Prediction Based on Hybrid Method in Complex Event Processing. In: *SAMI 2014*. IEEE 12th International Symposium on Applied Machine Intelligence and Informatics. Herľany, Slovak Republic, Danvers : IEEE, 2014. pp. 315-320.
- MACKO, P.: Natural Language as a Means of Communication in the Web. In: *WIKT 2014*. 9th Workshop on Intelligent and Knowledge Oriented Technologies. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 102-106. (in Slovak)
- MICHÁLEK, P. - CIHÁK, M. - KOVÁROVÁ, A.: Logging Programmers' Activities in More Detail - What Can its Vizualization Bring? In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 173-180.
- MÓRO, R. - HOLUB, M. - ŠEVCECH, J. - BIELIKOVÁ, M.: A Sandbox for Doing Research on Searching. Organization and Navigation Using Semantics in the Domain of Digital Libraries. In: *13th Conference Znalosti 2014*. Exhibition, education and Experts Networking, Jasná pod Chopkom, Slovak. Praha : Nakladatelství Oeconomica, 2014. pp. 88-91. (in Slovak)
- MÓRO, R.: Using Navigation Leads for Exploratory Search in Digital Libraries. In: *Personalized Web - Science, Technologies and Engineering*. 15th Spring 2014 PeWe Workshop Gabčíkovo, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 31-32.
- POLÁŠEK, I. - RUTTKAY-NEDECKÝ, I. - TÓTH, T. - RUTTKAY-NEDECKÝ, P.: Extracting, Identifying and Visualization of the Topics in Software Projects. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 103-108.
- POLÁŠEK, I. - MARKOVIČ, L. - TÓTH, T. - RUTTKAY-NEDECKÝ, P. - RUTTKAY-NEDECKÝ, I.: Refactoring of the Anti-Patterns in the Source Code Using the Rule-Based Approach. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 117-120.
- RÁSTOČNÝ, K.: Employing Information Tags in Software Development. In: *Personalized Web - Science, Technologies and Engineering*. 15th Spring 2014 PeWe Workshop Gabčíkovo, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 73-74.
- RÁSTOČNÝ, K.: Information Tags Management. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 87-94.
- RÁSTOČNÝ, K.: Information Tags: Model and Repository. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 95-96.
- RÁSTOČNÝ, K.: Metadata Anchoring for Source Code. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 97-98.

- RÁSTOČNÝ, K.: Metadata Maintenance for Large Information Spaces: A Survey. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 10-42.
- RUTTKAY-NEDECKÝ, I. - RUTTKAY-NEDECKÝ, P. - TÓTH, T. - POLÁŠEK, I.: Knowledge Retrieval and Graphical Representation within Software Development Projects. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 109-111.
- RUTTKAY-NEDECKÝ, I. - RUTTKAY-NEDECKÝ, P. - TÓTH, T. - POLÁŠEK, I.: Source Code Clustering in Dynamic Development Environment. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 99-102.
- SRBA, I.: Adaptive Support for Collaborative Knowledge Sharing. In: *Personalized Web - Science, Technologies and Engineering*. 15th Spring 2014 PeWe Workshop Gabčíkovo, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 109-110.
- SRBA, I. - BIELIKOVÁ, M.: Askalot: Answering Questions in Community of Students and their Teachers. In: *13th Conference Znalosti 2014*. Exhibition, education and Experts Networking, Jasná pod Chopkom, Slovak. Praha : Nakladateľství Oeconomica, 2014. pp. 92-95. (in Slovak, English)
- SRBA, I. - BIELIKOVÁ, M.: Achieving Sustainability of Communities in CQA Systems by Orientation to Responing Users. In: *WIKT 2014*. 9th Workshop on Intelligent and Knowledge Oriented Technologies. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 97-101. (in Slovak)
- SÚKENÍK, J. - LACKO, P.: Detection of Code Clones. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 113-114.
- ŠAJGALÍK, M.: Exploring Multidimensional Continuous Feature Space to Extract Relevant Words. In: *Personalized Web - Science, Technologies and Engineering*. 15th Spring 2014 PeWe Workshop Gabčíkovo, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 37-38.
- ŠAJGALÍK, M. - ŠIMKO, M. - BARLA, M. - BIELIKOVÁ, M.: Modeling of Word Semantics in Feature Vector Space. In: *WIKT 2014*. 9th Workshop on Intelligent and Knowledge Oriented Technologies. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 13-17. (in Slovak)
- ŠEVCECH, J.: Anomaly Detection in Streaming Data. In: *Personalized Web - Science, Technologies and Engineering*. 15th Spring 2014 PeWe Workshop Gabčíkovo, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 39-40.
- ŠEVCECH, J. - BIELIKOVÁ, M.: Representing of Time Series by Recurring Patterns. In: *Datakon 2014*. Proceedings of the 34th Annual Database Conference, Demänovská dolina, Slovak republic, Ostrava : VŠB - Technická univerzita, 2014. pp. 79-85. (in Slovak)

- ŠEVCECH, J.: Processing Data Streams by Transformation of Recurring Sequences to Symbols. In: *WIKT 2014. 9th Workshop on Intelligent and Knowledge Oriented Technologies*. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 121-125. (in Slovak)
- ŠIMKO, J. - BIELIKOVÁ, M.: Connecting Terms and Artifacts through Human Computation. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 133-134.
- ŠIMKO, J.: Crowdsourcing Strengthened by Eye Tracking. In: *13th Conference Znalosti 2014*. Exhibition, education and Experts Networking, Jasná pod Chopkom, Slovak. Praha : Nakladatelství Oeconomica, 2014. pp. 122-131. (in Slovak)
- TVAROŽEK, J. - NÁVRAT, P.: Modelling Programming Ability and Motivation. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 163-164.
- TVAROŽEK, J. - MÓRO, R. - LABAJ, M. - BIELIKOVÁ, M.: A View at User Experience of a Learner in Integrated Web Learning Systems. In: *WIKT 2014. 9th Workshop on Intelligent and Knowledge Oriented Technologies*. Smolenice, Slovak Republic. Bratislava : Nakladateľstvo STU, 2014, pp. 107-112. (in Slovak)
- ZBELL, P. - KURIC, E. - BIELIKOVÁ, M.: Travelling in Source Code Based on Concept Location and Capturing Evolution. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 121-128.
- ZELENÍK, D. - PODLUCKÁ, J.: Context Affecting the Software Developer and Quality of the Code. In: *Perconik - Personalized Conveying of Information and Knowledge*, Research Project Workshop, Smolenice, Slovak Republic, Bratislava : Nakladateľstvo STU, 2014. pp. 165-172.

Books

- NÁVRAT, P. - KUBÁN, P. - KRÁTKY, P. - MACKO, P. - MÓRO, R. - SRBA, I. - ŠAJGALÍK, M. - ŠEVCECH, J. - VRABLECOVÁ, P.: *Web Science: Origins, Subject, Methods*. 1. ed. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4194-1. 131 p. (in Slovak)
- ŠIMKO, J. - BIELIKOVÁ, M.: *Semantic Acquisition Games: Harnessing Manpower for Creating Semantics*. 1. ed. Springer, 2014. ISBN 978-3-319-06114-6. 141 p.

Parts of Books

- BIELIKOVÁ, M. - ŠIMKO, M. - BARLA, M. - TVAROŽEK, J. - LABAJ, M. - MÓRO, R. - SRBA, I. - ŠEVCECH, J.: ALEF: From Application to Platform for Adaptive Collaborative Learning. In: *Recommender Systems for Technology Enhanced Learning : Research Trends and Applications*. New York : Springer, 2014. ISBN 978-1-4939-0530-0. pp. 195-225.
- BIELIKOVÁ, M. - BARLA, M. - ŠIMKO, M.: Lightweight Semantics Modeling and Acquisition for the "Wild Web". In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project*

- TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 10-13.
- BIELIKOVÁ, M. - KOMPAN, M. - ZELENÍK, D.: Vector-based Tree News Recommendation. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 63-66.
- HARSÁNYI, Z. - ROZINAJOVÁ, V.: Identifying Semantic Relationships in Digital Libraries. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 95-98.
- HOLUB, M.- BIELIKOVÁ, M.: Utilization of Behavior of Users for Personalized Link Recommendation. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 119-120.
- KOMPAN, M. - BIELIKOVÁ, M.: Context and Group Modelling to Better Recommendations. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 6-9.
- KOMPAN, M. - BIELIKOVÁ, M.: Personalised Recommendations for Group of Users. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 130-133.
- KOVÁROVÁ, A.: Visualizing Multiple News Stories Using the New Galactic and Concurrent Stream Metaphors. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 173-176.
- KRAMÁR, T. - BIELIKOVÁ, M.: Detecting Search Sessions Using Document Metadata and Implicit Feedback. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 56-57.
- KRAMÁR, T. - PETLUŠ, M.: Learning to Rank Scientific Papers. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 46-49.
- KRAMÁR, T. - BILEVIC, R.: Modeling the Dynamics of Research Interests. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 50-55.
- KRAMÁR, T. - BARLA, M. - BIELIKOVÁ, M.: PeWeProxy: A Platform for Ubiquitous Web Adaptation and User Modeling. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 58-60.

- KUČEČKA, T. - CHUDÁ, D.: Text Clustering on Web with Frequent Itemsets - FICWAN. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 128-129.
- KURIC, E. - BIELIKOVÁ, M.: Automatic Image Annotation Based on Visual Content Analysis. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 82-85.
- KUZÁR, T. - NÁVRAT, P.: Blog Clustering Enhanced by Mining the Web Comments. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 43-45.
- LABAJ, M. - BIELIKOVÁ, M.: Tabbed Browsing Behaviour in Digital Space. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 155-157.
- MARTINSKY, L. - NÁVRAT, P.: Adaptive Query Formulation Improvement. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 32-35.
- MICHALCO, J. - NÁVRAT, P.: Arranging Face-to-face Events Using Social Networking Service. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 36-39.
- MOLNÁR, S. - MÓRO, R. - BIELIKOVÁ, M.: Utilizing History of Navigation in A Digital Library for Term Cloud Personalization. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 86-88.
- MÓRO, R. - HOLUB, M. - ŠEVCECH, J. - Bieliková, M.: Annota: Platform for Conducting Experiments in Digital Libraries Information Space. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 141-144.
- MÓRO, R. - BIELIKOVÁ, M.: Exploration and Organization of Digital Library Information Space. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 137-140.
- MÓRO, R. - BIELIKOVÁ, M.: The Role of Text Summarization in Digital Libraries. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 89-91.
- NÁVRAT, P. - BOU EZZEDDINE, A.: Bee Hive at Work: Model with Searching and Optimizing Potential. In: *Cognitive Traveling in Digital Space of the Web and*

- Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project TraDice.* Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 78-81.
- NÁVRAT, P.: Cognitive Traveling in Digital Space. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project TraDice.* Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 1-3.
- RÁSTOČNÝ, K. - BIELIKOVÁ, M.: Cluster-based and Graph-Based Browsing and Exploring Search Results. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project TraDice.* Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 71-73.
- SABO, Š.: Identification and Tracking of News Stories Using Honey Bee Inspired Agents. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project TraDice.* Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 4-5.
- SRBA, I. - BIELIKOVÁ, M.: Adaptive Support for Collaborative Knowledge Sharing. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project TraDice.* Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 134-136.
- ŠAJGALÍK, M. - BARLA, M. - BIELIKOVÁ, M.: Browser-based User Interest Modelling. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project TraDice.* Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 102-105.
- ŠAJGALÍK, M. - BARLA, M. - BIELIKOVÁ, M.: Leveraging Feature Vectors to Extract Discriminative Words. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project TraDice.* Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 152-154.
- ŠEVCECH, J. - BIELIKOVÁ, M.: Annotations as User Interest Indicators for Related Document Retrieval. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project TraDice.* Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 67-70.
- ŠEVCECH, J. - BIELIKOVÁ, M.: Automatic Annotation of Non-english Web Content. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project TraDice.* Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 99-101.
- ŠEVCECH, J. - KOMPAN, M. - BIELIKOVÁ, M.: Evaluation Framework for Personalized Recommendations. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project TraDice.* Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 61-62.
- ŠIMKO, J. - BIELIKOVÁ, M.: Multimedia Archive Organization and Domain Modelling Using GWAPs. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the Interdisciplinary Multi-Partner Project TraDice.* Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 17-20.
- ŠIMKO, J. - MARKECH, M.: Semantization of Research Group's Wiki. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries : Yield of the*

- Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 21-26.
- ŠIMKO, M.: Advanced Information Sources for User Modelling. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 109-110.
- ŠIMKO, M.: Domain Modelling in Socially Aware Information Spaces. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 106-108.
- TVAROŽEK, J.: Wikipedia Explicit Semantics Based Entity Disambiguation. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 14-16.
- VNENK, Ľ. - BIELIKOVÁ, M.: Search Query Expansion Based on Searcher's Activity Context. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 170-172.
- ZELENÍK, D. - BIELIKOVÁ, M.: Human Behavior as an Aspect for Context Inference. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 111-114.
- ZELENÍK, D. - BIELIKOVÁ, M.: Recommendation Based on Graph Algorithms. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 115-118.
- ŽILINČÍK, M. - NÁVRAT, P. - KOSKOVÁ, G.: Exploratory Search on Social Networking Sites: How User Feedback and Multi-Perspective Microblog Analysis Can be Employed on Twitter. In: *Cognitive Traveling in Digital Space of the Web and Digital Libraries* : Yield of the Interdisciplinary Multi-Partner Project TraDice. Bratislava : Nakladateľstvo STU, 2014. ISBN 978-80-227-4254-2. pp. 40-42.

9.8 Cooperation

Cooperation in Slovakia

- Institute of Informatics, Slovak Academy of Sciences, Bratislava
- Department of Library and Information Science, Faculty of Letters, Comenius University, Bratislava
- Institute of Informatics, Faculty of Science, Pavol Jozef Šafárik University in Košice
- Faculty of Electrical Engineering and Information Technologies Technical University of Košice
- Faculty of Management Science and Informatics, University of Žilina
- Asseco

- Ditec
- Datalan
- Gratex International
- GBSW
- Hewlett-Packard Slovakia
- IBM Slovakia
- Microsoft Slovakia
- Nokia Slovakia
- Oracle Slovakia
- PosAm
- Siemens
- SOFTEC
- Soitron
- Slovak Telecom
- Tempest
- Unicorn

International Cooperation

- MIR Labs, Machine Intelligence Research Labs, global not-for-profit academic consortium oriented to innovation and research in various areas of machine intelligence. The Institute is part of the MIR Labs Network with Pavol Návrat serving as coordinator for Slovakia
- WIC, Web Intelligence Consortium, an international not-for-profit organisation devoted to scientific research and industry development in the area of web intelligence. The Institute plays a role of Slovak Research Centre of the Consortium.
- AOSD-Europe, integrates and coordinates research, education and dissemination activities of its members in the area of aspect oriented development of software. Originally, it has been a 7. Framework Programme project.
- School of Information Sciences, University of Pittsburgh, Pittsburgh, USA
- Institute of Software Technology and Interactive Systems, Faculty of Informatics, Vienna University of Technology
- Department of Software Technology and Methodology, Faculty of Informatics, Eötvös Loránd University, Budapest
- Faculty of Information Technologies, Czech University of Technology, Prague, Czech Republic
- Department of Computers, Faculty of Electrical Engineering, Czech Technical University in Prague, Czech Republic
- Institute of Information Systems, Faculty of Information Technologies, Brno University of Technology, Czech Republic

- Institute of Intelligent Systems, Faculty of Information Technologies, Brno University of Technology, Czech Republic
- Department of Computers, Faculty of Applied Science, University of West Bohemia in Pilsen, Czech Republic
- Department of Computer Science, Faculty of Electrical Engineering and Computer Science, Technical University of Ostrava, Czech Republic
- Faculty of Informatics, Masaryk University, Brno, Czech Republic
- Department of Software Engineering, Faculty of Mathematics and Physics, Charles University in Prague, Czech Republic
- UNESCO–Division of Information and Informatics, Paris, France
- University of Maribor, Slovenia
- Division of Computer Science, National Technical University of Athens, Greece
- Department of Information and Communication Systems Engineering, University of the Aegean, Greece
- Institute of Computer Science, Faculty of Philosophy and Natural Sciences, Silesian University in Opava, Czech Republic
- Lancaster University, United Kingdom
- Faculty of Electrical and Electronic Engineering and Automation, University of Rousse, Bulgaria
- Faculty of Sciences, University of Novi Sad, Serbia

Visits of Staff Members

- *M. Bieliková*: DATAKON 2014, Brno University of Technology, Brno, Czech Republic, January 15-16, 2014
- *R. Móro*: ECIR 2014, Universiteit van Amsterdam, Amsterdam, Nederland, April 12-16, 2014
- *M. Lucká, G. Kosková, A. Bou Ezzeddine*: IDC Data Hub Conference, Vienna, Austria, June 5, 2014
- *V. Rozinajová*: IFIP TC8 Information Systems, Copenhagen, Denmark, May 30-June 2, 2014
- *J. Lang, A. Kovárová*: CompSysTech 2014, 15th International Conference on Computer Systems and Technologies, Ruse, Bulgaria, June 25-28, 2014
- *M. Bieliková*: ICWE 2014, 14th International Conference on Web Engineering, Toulouse, France, July 1-6, 2014
- *M. Bieliková*: UMAP 2014, The 22nd Conference on User Modeling, Adaptation and Personalization, Aalborg, Denmark, July 6-13, 2014
- *M. Šimko, M. Labaj*: ICWL 2014, The 13th International Conference on Web-based Learning, Tallinn, Estonia, August 13-18, 2014
- *M. Bieliková*: Hypertext 2014, 25th ACM Conference on Hypertext and Social Media, Santiago, Chile, August 8 - September 6, 2014

- *R. Móra*: WOSP 2014, 3rd International Workshop on Mining Scientific Publications, London, United Kingdom, September 8-15, 2014
- *P. Návrat*: WIC 2014, The International Conference on Web Intelligence, Warsaw, Poland, August 10-15, 2014
- *Kovárová*: E-Learning 8th International Conference on e-Learning 2014, Lisbon, Portugal, September 10-14, 2014
- *P. Lacko*: SISY 2014, IEEE 12th International Symposium on Intelligent Systems and Informatics, Subotica, Serbia, September 10-14, 2014
- *M. Šimko*: ECTEL 2014, 9th European Conference on Technology Enhanced Learning, Graz, Austria, September 15-19, 2014
- *E. Kuric, K. Rástočný*: ESEM 2014, The International Symposium on Empirical Software Engineering and Measurement, Torino, Italy, September 17-20, 2014
- *M. Šajgalík*: SLSP 2014, 2nd International Conference on Statistical Language and Speech Processing, Grenoble, France, October 13-17, 2014
- *R. Móra*: WISE 2014, Aristotle University of Thessaloniki, Thessaloniki, Greece, October 11-15, 2014
- *J. Ševcech*: IDA 2014, Leuven, Belgium, October 29 – November 2, 2014
- *M. Kompan, O. Kaššák*: RecSys 2014, 8th ACM Conference on Recommender Systems, Foster City, Silicon Valley, USA, October 2-12, 2014
- *V. Rozinajová*: ICT Proposers' Day I 2014, European Commission's DG Connect, Florence, Italy, October 9-11, 2014
- *M. Šimko*: Morgan Stanley, Budapest, October 22, 2014
- *P. Návrat*: Brno University of Technology, Brno, Czech Republic, November 5, 2014
- *M. Bieliková*: SMAP 2014, 9th International Workshop on Semantic and Social Media Adaptation and Personalization, Corfu, Greece, November 5-9, 2014
- *J. Tvarožek*: WiPSCE, Berlin, Germany, November 7-9, 2014
- *J. Tvarožek Jozef, M. Šajgalík, L. Gallay, M. Kalužník, T. Žuffa, L. Marták, A. Švec, V. Tibenská*: ACM, Uniwersytet Jagielloński, Krakow, Poland, November 14-17, 2014

9.9 Membership in Professional Organisations and Societies

Slovak Professional Organisations and Societies

Michal Barla

- Slovak Society for Computer Science (member, since 2007)

Mária Bieliková

- Accreditation Commission of Slovakia (member since 2012)
- Working group of the Accreditation Commission of Slovakia for Information Sciences and Technologies (chair, since 2012)
- Slovakia Chapter of the Association for Computing Machinery (member, since 2009)

- Slovak Artificial Intelligence Association (member, since 2000)
- Slovak Centre of the IET (member, since 1998)
- Slovak Society for Computer Science (member, since 1998; member of the executive committee, since 2000)

Daniela Chudá

- Slovakia Chapter of the Association for Computing Machinery (member, since 2009)
- Slovak Society for Computer Science (member, since 2012)

Michal Kompan

- Slovak Society for Computer Science (member, since 2012)

Tomáš Kramár

- Slovak Society for Computer Science (member, since 2012)

Eduard Kuric

- Slovak Society for Computer Science (member, since 2012)

Martin Labaj

- Slovakia Chapter of the Association for Computing Machinery (member, since 2011)
- Slovak Society for Computer Science (member, since 2012)

Peter Lacko

- Slovakia Chapter of the Association for Computing Machinery (member, since 2011)

Marián Lekavý

- Slovak Society for Computer Science (member, since 2007)

Mária Lucká

- Slovak Society for Computer Science (member, since 2012)

Pavol Mederly

- Slovak Society for Computer Science (member, since 1996)

Ludovít Molnár

- Working Group of the Accreditation Commission of Slovakia for Information Sciences and Technologies (member, since 2003)
- Slovak Commission for UNESCO (member since 1993, chair, since 1996)
- Slovak Society for Computer Science (member, since 1992)
- Technical Standardization Committee (member, since 1992)

Pavol Návrat

- Slovakia Chapter of the Association for Computing Machinery (member, since 2009)
- Slovak Artificial Intelligence Association (since 2000), member of the executive committee and vice chairman (since 2000)
- Slovak Association of Mathematicians and Physicists (member, since 1982)
- Slovak Centre of the IET (member, since 1996)
- Slovak Society for Computer Science (member, since 1992)

Karol Rástočný

- Slovakia Chapter of the Association for Computing Machinery (member, since 2011)
- Slovak Society for Computer Science (member, since 2012)

Ivan Polášek

- Gratex IT Institute (supervisory board member, since 2008)

Viera Rozinajová

- Slovakia Chapter of the Association for Computing Machinery (member, since 2009)
- Slovak Society for Computer Science (member, since 2012; member of the executive committee, since 2012)

Jakub Šimko

- Slovak Society for Computer Science (member, since 2012)

Marián Šimko

- Slovakia Chapter of the Association for Computing Machinery (member, since 2009)
- Slovak Society for Computer Science (member, since 2012)

Valentino Vranič

- Slovak Society for Computer Science (member, since 2001)

Dušan Zeleník

- Slovak Society for Computer Science (member, since 2012)

International Professional Organisations and Societies*Mária Bielíková*

- IEEE, Institute of Electrical and Electronic Engineers (member, since 1998; senior member since 2003)
- IEEE Computer Society (member, since 1997)
- IET, Institution of Engineering and Technology (member, since 1998)
- ECUK, Engineering Council UK (registered Chartered Engineer, since 1998)
- ACM, Association for Computing Machinery (member, since 1998; senior member since 2009)
- ACM SIGWEB, Special Interest Group on Hypertext the Web (member, since 2007)
- IFIP, International Federation for Data Processing (member of Technical Committee TC2 – Software: Theory and Practice, since 2008)
- ISWE, International Society for Web Engineering (member, since 2007)
- CaSTB, Czech and Slovak Testing Board, a member of ISTQB, International Software Testing Qualifications Board (member, since 2006)
- Datakon – Annual Conference on the Current Trends in Databases and Information Systems Series, standing Steering Committee (member, since 2003)
- SMAP – International Workshop on Semantic Media Adaptation and Personalization, standing Steering Committee (member since 2011)

Michal Holub

- ACM, Association for Computing Machinery (member, since 2010)

Daniela Chudá

- ACM, Association for Computing Machinery (member, since 2009)

Martin Labaj

- ACM, Association for Computing Machinery (member, since 2009)
- IEEE, Institute of Electrical and Electronic Engineers (member, since 2007)
- IEEE Computer Society (member, since 2007)

Peter Lacko

- IEEE, Institute of Electrical and Electronic Engineers (member, since 2008)
- IEEE Computer Intelligence Society (member, since 2008)
- ACM, Association for Computing Machinery (member, since 2010)
- ACM SIGHPC, Special Interest Group on High Performance Computing (member, since 2010)

Ludovít Molnár

- IEEE, Institute of Electrical and Electronic Engineers (member, since 1991)
- ACM, Association for Computing Machinery (member, since 1991)
- UNESCO (Slovak Commission: member of bureau –1993-96, chair – since 1996, Informatics section – chair since 1993. HQ Paris: IIP – member of bureau –1996-98, chair – 1998-2001, IFAP – member of bureau – since 2001. Executive Board – member – since 2001)
- ICETA, member of honorary committee

Pavol Návrát

- IEEE, Institute of Electrical and Electronic Engineers (member, since 1996; senior member, since 1998)
- IEEE Computer Society (member, since 1996)
- ACM, Association for Computing Machinery (member, since 1998; senior member since 2009)
- IFIP, International Federation for Data Processing (member of Technical Committee TC12 – Artificial Intelligence, since 1998)
- IET, Institution of Engineering and Technology (member, since 1998; fellow, since 1998)
- ECUK, Engineering Council UK (registered Chartered Engineer, since 1998)
- JCKBSE, Joint Conference on Knowledge-Based Software Engineering Series, standing Steering Committee (member, since 1998)
- ADBIS, Advances in Databases and Information Systems Conference Series, standing Steering Committee (member, since 1998)
- Znalosti Conference Series, standing Steering Committee (member, since 2006)

Karol Rástočný

- ACM, Association for Computing Machinery (member, since 2011)

Viera Rozinajová

- ACM, Association for Computing Machinery (member, since 2009)
- IFIP, International Federation for Data Processing (member of Technical Committee TC8 – Information Systems, since 2012)

Marián Šimko

- ACM, Association for Computing Machinery (member, since 2009)

Valentino Vranič

- IEEE, Institute of Electrical and Electronic Engineers (member, since 2011)
- IEEE Computer Society (member, since 2011)
- AOSD-Europe, European Network of Excellence on Aspect-Oriented Software Development (contact person at STU, since 2009)

9.10 Other Activities

- ACM SPY 2014 – Czech ACM Chapter & Slovak ACM Chapter Student Project of the Year competition, M. Bieliková: member of reviewers board
<http://www.acm-spy.sk>, <http://www.acm-spy.cz>
- ACM International Collegiate Programming Contest 2014 – Slovak University of Technology Contest – A. Považanová: event organiser
<http://www.fiit.stuba.sk/acm/>
- FIITApixel – photography competition – J. Lang: competition director,
<http://foto.fiit.stuba.sk>
- GraFIIT Foundation – book edition support – I. Polášek, P. Návrat: organisers
- IIT.SRC 2014 – Informatics and Information Technologies Student Research Conference, April 29, 2014 – M. Bieliková: programme committee chair, M. Barla, A. Bou Ezzeddine, D. Chudá, M. Kompan, G. Kosková, A. Kovárová, P. Lacko, M. Laclavík, J. Lang, M. Lekavý, M. Lucká, Ľ. Molnár, P. Návrat, I. Polášek, V. Rozinajová, P. Šaloun, M. Šimko, J. Šimko, J. Tvarožek, V. Vranič: members of programme committee, <http://www.fiit.stuba.sk/iit-src/>
- TP Cup 2014 student competition – M. Bieliková: event organiser
<http://www.fiit.stuba.sk/tp-cup/>
- International Journal of Intelligent Information and Database Systems – M. Bieliková: member of the editorial board
- Journal of Web Engineering – M. Bieliková: member of the editorial board
- Information Sciences and Technologies Bulletin of the ACM Slovakia – P. Návrat: Editor-in-Chief, M. Bieliková: Associate Editor-in-Chief
- Informatica, An International Journal of Computing and Informatics – P. Návrat: member of the editorial board
- Computing and Informatics – P. Návrat: associate editor
- Personalized Web (PeWe) Group seminar organization – M. Bieliková: group coordinator; <http://www.fiit.stuba.sk/research/pewe/>
- ProFIIT 2014 – secondary school programming competition – I. Dekýšová: event organiser, <http://www.fiit.stuba.sk/profiit>
- RoboCup at FIIT 2014 – Soccer Simulation League, Regional Tournament in Bratislava – I. Kapustík and M. Lekavý: event organisers
<http://www.fiit.stuba.sk/robocup/>
- ABIS 2014 – 20th International Workshop on Adaptivity and User Modeling, August 31 - September 3, 2014, Munich, Germany – M. Bieliková: member of programme committee

- ACIIDS 2014 – 6th Asian Conference on Intelligent Information and Database Systems, April 7-9, 2014, Bangkok, Thailand – M. Bieliková: member of programme committee
- ADBIS 2014 – 18th East-European Conference on Advances in Databases and Information Systems, September 7-10, 2014, Ohrid, Republic of Macedonia – M. Bieliková: member of programme committee
- ASONAM 2014 – IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, August 17-20, 2014, Beijing, China – M. Bieliková: member of programme committee
- BIS 2014 – 17th International Conference on Business Information Systems, May 21-23, 2014, Larnaca, Cyprus – M. Bieliková: member of programme committee
- CompSysTech'14 – International Conference on Computer Systems and Technologies, 2013, Ruse, Bulgaria – D. Chudá, P. Návrát: member of programme committee
- DATAKON 2014 – Annual Conference on Current Trends in Databases and Information Systems, September 25-29, 2014, Jasná, Slovakia – M. Bieliková: member of steering committee, member of programme committee
- DL 2014 – Digital Libraries 2014 - ACM/IEEE Joint Conference on Digital Libraries (JCDL 2014) and International Conference on Theory and Practice of Digital Libraries (TPDL 2014), September 8-12, 2014, London, UK – M. Bieliková: member of programme committee
- DSAA 2014 – International Conference on Data Science and Advanced Analytics, October 30 - November 1, 2014, Shanghai, China – M. Bieliková: member of programme committee
- e-Learning 2014 – International Conference on e-Learning, September 12, 2014, Santa Cruz de Tenerife, D. Chudá, P. Návrát, J. Tvarožek: members of programme committee
- ENASE 2014 – 9th International Working Conference of Evaluation on Novel Approaches to Software Engineering, April 27-29, 2014, Lisbon, Portugal – M. Bieliková: member of programme committee
- ENIC 2014 – The First European Network Intelligence Conference, September 29-30, 2014, Wroclaw, Poland, – M. Bieliková: member of programme committee
- HRSUNE 2014 – 1st International Workshop on Human Aspects of Making Recommendations in Social Ubiquitous Networking Environments, June 16, 2014, Macau, China – M. Bieliková: member of programme committee
- HT 2014 – 25th ACM Conference on Hypertext and Hypermedia, September 1-4, 2014, Santiago, Chile – M. Bieliková: member of programme committee
- ICALT 2014 – 14th IEEE International Conference on Advanced Learning Technologies, July 7-10, 2014, Athens, Greece, July 7-10 – M. Bieliková: member of programme committee

- ICCCI 2014 – 6th International Conference on Collective Intelligence Technologies and Applications, September 24-26, 2014, Seoul, Korea – M. Bieliková: member of programme committee
- ICWE 2014 – 14th International Conference on Web Engineering, July 1-4, 2014, Toulouse, France – M. Bieliková: member of programme committee
- ICWL 2014 – 13th International Conference on Web-based Learning, Tallinn, August 13-16, 2014, Estonia – M. Bieliková: member of programme committee
- ISMIS 2014 – 21th International Symposium on Methodologies for Intelligent Systems, June 25-27, 2014, Roskilde, Denmark – M. Bieliková: member of programme committee
- ITAT 2014 – Workshop on Information Technologies - Applications and Theory, September 25-29, 2014, Donovaly, Slovakia – M. Bieliková: member of programme committee
- IWCSN@WISE 2014 – International Workshop on Computational Social Networks, October 12-14, 2014, Thessaloniki, Greece – M. Bieliková: member of programme committee
- KES AMSTA 2014 – 8th International KES Symposium on Agent and Multi-Agent Systems – Technologies and Applications, June 18-20, 2014, Chania, Greece – M. Bieliková: member of programme committee
- MCCIS-ISA 2014 – IADIS Intelligent Systems and Agents, July 15-17, 2014, Lisbon, Portugal – M. Bieliková: member of programme committee
- MISNC 2014 – Multidisciplinary International Social Networks Conference, September 13-14, 2014, Kaohsiung, Taiwan – M. Bieliková: member of programme committee
- SMAP 2014 – 9th International Workshop on Semantic Media Adaptation and Personalization, November 6-7, 2014, Shanghai, China – M. Bieliková: member of programme committee, member of steering committee
- SNAA@ASONAM 2014 – 4th Workshop on Social Network Analysis and Applications at International Conference on Advances in Social Networks and Mining (ASONAM 2014), August 17-20, 2014, Beijing, China – M. Bieliková: member of programme committee
- SOFSEM 2014 – 40th International Conference on Current Trends in Theory and Practice of Informatics, January 25-30, 2014, Nový Smokovec, Slovakia – M. Bieliková: member of programme committee
- UMAP DC 2014 – 22nd Conference on User Modelling, Adaptation and Personalization, Doctoral Consortium, July 7-11, 2014, Aalborg, Denmark – M. Bieliková: member of programme committee
- WIKT 2014 – 9th Workshop on Intelligent and Knowledge oriented Technologies, November 20-21, 2014, Smolenice, Slovakia – M. Bieliková, D. Chudá, P. Návrat, V. Rozinajová: members of programme committee
- WISM 2014 – 11th International Workshop on Web Information Systems Modeling, October 27-30, 2014, Atlanta, Georgia – M. Bieliková: member of programme committee

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- WWW/Internet 2014 – IADIS International Conference on WWW/Internet, October 25-27, 2014, Thessaloniki, Greece – M. Bieliková: member of programme committee
 - Znalosti 2014 – Annual Conference on Knowledge Acquisition, Discovery, Accessing and Exploitation, September 26-28, 2014, Jasná pod Chopkom, Slovakia – M. Bieliková, D. Chudá, P. Návrat, M. Šimko: members of programme committee, P. Návrat: member of steering committee

10 Networking Academy

E-mail: info@cisco.fiit.stuba.sk
Web: www.cisco.fiit.stuba.sk
Tel: +421 2 210 22 224
Fax: + 421 2 654 20 587

In 2011 the former Regional Networking Academy (RCNA FIIT STU) was transformed into the Networking Academy (NA FIIT STU) and the Instructor Training Centre (ITC FIIT STU) was established. This centre consists of three multipurpose research and pedagogical laboratory facilities designated for education in the field of computer networks at two degrees of study programme Computer and Communication Systems and Networks and for education of subjects related to Computer Networking of the study programme Informatics.

Besides filling study programs, Networking Academy provides complete courses and study programs in the field of computer networks as a part of Cisco Networking Academy Program – NetAcad. Throughout these courses students gain the necessary knowledge and practical skills to successfully pass Cisco Certified Networking Associate (CCNA) and Cisco Certified Networking Professional (CCNP) certification exams. These exams are well known and highly recognized by the industry. Education that is part of the Academy offers complete spectrum of courses, starting with basic principles of how computer networks work and continuing with modern networking technologies such as IP Telephony and Wireless Communication based on IEEE 802.11 standards (WiFi). Laboratory facilities are equipped with modern communication technology including hardware routers, hardware switches, hardware firewalls, PCs with connection to the Internet and other necessary components for the purpose of practical education in the field of computer networks.

NA FIIT STU offers technological environment for research in the field of modern methods of communication in the computer networks. It creates quality conditions for solving research grants in the field of methods and resources for creating security and management of communication and mobile computer systems. Pedagogical process is greatly enhanced by providing the necessary support for practical learning during the education of courses related to computer networking throughout the two degrees of study program Computer and Communication Systems and Networks. Within the education process ITC FIIT STU prepares instructor trainings and prepares students for CCNA and CCNP certification exams.

10.1 Staff

Director

Pavel Čičák, Associate Professor, CCNA, CCAI-CCNA

Administrative Department

Marušincová Zuzana

Instructor Staff

Andrej Binder, CCNA, CCNP

Martin Čechvala, CCNP

Boris Dado

Pavol Helebrandt

Martin Hrubý, CCNA, CCNP

Adrián Chovan, CCNA, CCNP

Katarína Jelemenská, PhD.

Margaréta Kotočová, Associate Professor, CCNA, CCAI-CCNA

Dominik Macko

Ján Skalný, CCNA, CCAI-CCNA, CCNA Security

Viktor Šulák, CCNA

Engineering Staff

Dušan Bernát

Roman Stoviček, PhD.

10.2 Study programmes

- Study program for preparation for certification exam CCNA (200-120 CCNA)
- Study program for preparation for certification exam CCNP (642-902 ROUTE, 642-813 SWITCH, 642-832 TSHOOT)
- Study program for preparation for certification exam CCNA Wireless (640-722 IUNWNE)
- Study program for preparation for certification exam CCNA Security (640-554 IINS)

10.3 Cooperation

Cooperation in Slovakia

- Academy Support Centre, Faculty of Electrical Engineering and Information Technology, Technical University in Košice
- Instructor Training Centre, Faculty of Management Science and Informatics, University of Žilina
- CISCO Systems Slovakia, Ltd.
- SOITRON, Ltd.
- DITEC, Ltd.
- Tempest, Ltd.
- Hewlett-Packard Slovakia, Ltd.

- IBM Slovakia, Ltd.
- Microsoft Slovakia, Ltd.

International Cooperation

- Cisco Networking Academy, Czech University of Technology, Prague, Czech Republic
- Cisco Networking Academy, Faculty of Information Technologies, Technical University in Brno, Czech Republic

11 Photo Gallery





12 FIIT Personnel

ABAFFY, Jaroslav, Ing.	Institute of Computer Systems and Networks
ANDREJČIKOVÁ, Nadežda, Ing. PhD.	Institute of Informatics and Software Engineering
BABINCOVÁ, Danka, PhDr.	Institute of Informatics and Software Engineering
BAJBÁROVÁ, Ružena	Deanship – Secretariat
BAKOŠOVÁ, Anna	Department of Tech. Operation and Management
BAKOVÁ, Lenka, Mgr.	Institute of Informatics and Software Engineering
BALÁŽ, Martin	Centre of Computing and Communication Services
BALÁŽOVÁ, Rozália	Department of Tech. Operation and Management
BALAŽIA, Ján, Ing.	Institute of Computer Systems and Networks
BALŠAN, Pavol	Department of Tech. Operation and Management
BALŠAN, Viliam	Department of Tech. Operation and Management
BARLA, Michal, Ing. PhD.	Institute of Informatics and Software Engineering
BARTOŠOVIČ, Lukáš, Mgr.	Institute of Informatics and Software Engineering
BEČKA, Martin, Mgr. PhD.	Institute of Informatics and Software Engineering
BELAJOVÁ, Lenka	Deanship – Study Affairs
BENCEL, Rastislav	Institute of Computer Systems and Networks
BENEŠOVÁ, Vanda, Ing. PhD.	Institute of Applied Informatics
BERNÁT, Dušan, Ing.	Institute of Computer Systems and Networks
BIELEKOVÁ, Alexandra, Ing.	Head of Administrative Department
BIELIKOVÁ, Mária, prof. Ing. PhD.	Institute of Informatics and Software Engineering
BINDER, Andrej, Ing.	Institute of Computer Systems and Networks
BLAHUŠIAK, Pavol, Mgr.	Institute of Informatics and Software Engineering
BLAŽKOVÁ, Katarína	Department of Tech. Operation and Management
BLŠTÁK, Miroslav, Ing.	Institute of Informatics and Software Engineering
BÖHM, Radoslav, RNDr. PhD.	Institute of Informatics and Software Engineering
BORSOVÁ, Diana	Department of Tech. Operation and Management
BOU EZZEDDINE, Anna, RNDr. PhD.	Institute of Informatics and Software Engineering
BRATH, Peter	Centre of Computing and Communication Services
BREZNENOVÁ, Soňa	Deanship – Personal Resources
BRONIŠ, Peter, Mgr. PhD.	Institute of Informatics and Software Engineering
BRONIŠ, Roman, Ing.	Institute of Computer Systems and Networks

BUDAY, Marián	Department of Tech. Operation and Management
BULKO, Martin, Mgr.	Institute of Informatics and Software Engineering
BUZOVÁ, Katarína, Mgr. PhD.	Institute of Informatics and Software Engineering
BYSTRICKÝ, Michal, Ing.	Institute of Informatics and Software Engineering
CIGLAN, Marek, RNDr. PhD.	Institute of Informatics and Software Engineering
CLEMENTIS, Ladislav, Ing.	Institute of Applied Informatics
ČECHVALA, Martin, Ing.	Institute of Computer Systems and Networks
ČERŇANSKÝ, Michal, doc.Ing. PhD.	Institute of Applied Informatics
ČERNÝ, Vladimír, doc. RNDr. CSc.	Institute of Informatics and Software Engineering
ČEVOROVÁ, Kristína, Mgr.	Institute of Informatics and Software Engineering
ČIČÁK, Pavel, doc. Ing. PhD.	Institute of Computer Systems and Networks
ČIPKOVÁ, Karla, RNDr. PhD.	Institute of Informatics and Software Engineering
DADO, Boris, Ing.	Institute of Computer Systems and Networks
DANIŠOVÁ, Viera, Mgr.	Deanship – Economics
DEKÝŠOVÁ, Iveta, JUDr.	Institute of Informatics and Software Engineering
DRAHOŠ, Peter, Ing. PhD.	Institute of Applied Informatics
DRGONEC, Vladimír, Ing.	Centre of Computing and Communication Services
DRNAJOVÁ, Barbara, Mgr.	Institute of Computer Systems and Networks
DÚBRAVSKÝ, Jozef, Ing. PhD.	Department of Tech. Operation and Management
DUDÁK, Vladimír	Department of Tech. Operation and Management
ĎURÍČEK, Maroš, Ing.	Institute of Computer Systems and Networks
ERDÉLYIOVÁ GANCÁROVÁ, Martina, Mgr.	Institute of Informatics and Software Engineering
FALBOVÁ, Lucia, Mgr.	Centre of Information and Library Services
FIGURA, Zdenko	Department of Tech. Operation and Management
FISCHEROVÁ, Mária, Mgr.	Institute of Computer Systems and Networks
FLOCHOVÁ, Jana, Ing. PhD.	Institute of Computer Systems and Networks
FOLGELTON, Andrej, Ing.	Institute of Applied Informatics
FORUS, Samo, Ing.	Centre of Computing and Communication Services
FRĚALA, Tomáš, Ing.	Institute of Informatics and Software Engineering
FURKOVÁ, Andrea, Ing. PhD.	Centre of Computing and Communication Services
GALBAVÝ, Miroslav, Ing.	Institute of Applied Informatics
GENČI, Ján, doc. Ing. PhD.	Institute of Informatics and Software Engineering
GNIPOVÁ, Marta, RNDr.	Centre of Computing and Communication Services
GRAMATOVÁ, Elena, doc. RNDr. PhD.	Institute of Computer Systems and Networks
GRELL, Peter	Centre of Computing and Communication Services
GRISÁKOVÁ, Nora, Ing. PhD.	Institute of Informatics and Software Engineering
GROŠEK, Otokar, prof. RNDr. PhD.	Institute of Informatics and Software Engineering
GRÚBEROVÁ, Alena, Bc.	Institute of Computer Systems and Networks
GULLER, Dušan, doc. RNDr. PhD.	Institute of Applied Informatics

HABAJOVÁ, Eva	Deanship – Economics
HALAGAN, Tomáš, Ing.	Institute of Computer Systems and Networks
HARSÁNYI, Zoltán, Ing.	Institute of Informatics and Software Engineering
HELEBRANDT, Pavol, Ing.	Institute of Computer Systems and Networks
HLÁVKOVÁ, Eva	Department of Tech. Operation and Management
HOLUB, Michal, Ing.	Institute of Informatics and Software Engineering
HORVÁTH, Pavol, prof. Ing. PhD.	Institute of Computer Systems and Networks
HRICOVÁ, Mária	Deanship – Research
HRUBÝ, Martin, Ing. PhD.	Institute of Computer Systems and Networks
HRVOL, Peter	Centre of Computing and Communication Services
HUCKOVÁ, Ivana	Institute of Computer Systems and Networks
HUDEC, Ján, Ing. PhD.	Institute of Computer Systems and Networks
HUDEC, Ladislav, doc. Ing. PhD.	Institute of Applied Informatics
HUSKOVÁ, Eubica	Deanship – Study Affairs
CHALMOVIANSKÝ, Pavel, doc. Ing. PhD.	Institute of Applied Informatics
CHLEBANA, Matej, Bc.	Institute of Informatics and Software Engineering
CHUDÁ, Daniela, doc. Mgr. PhD.	Institute of Informatics and Software Engineering
CHALUPA, David, Ing. PhD.	Institute of Applied Informatics
IVANEKOVÁ, Verona	Department of Tech. Operation and Management
JAKUBÍK, Jaroslav, Ing. PhD.	Institute of Informatics and Software Engineering
JAŠICOVÁ, Eubica, Mgr.	Deanship – Study Affairs
JELEMENSKÁ, Katarína, Ing. PhD.	Institute of Computer Systems and Networks
JOMBÍK, Peter, Ing.	Institute of Computer Systems and Networks
JURÍK, Peter, Ing.	Institute of Applied Informatics
JURIKOVIČ, Matej, Ing.	Institute of Computer Systems and Networks
KAPEC, Peter, Ing. PhD.	Institute of Applied Informatics
KAPUSTÍK, Ivan, Ing.	Institute of Informatics and Software Engineering
KAŠŠÁK, Ondrej, Ing.	Institute of Informatics and Software Engineering
KLOSKA, Matej, Bc.	Institute of Informatics and Software Engineering
KOLLÁR, Ivan, Ing.	Centre of Computing and Communication Services
KOMPAN, Michal, Ing. PhD.	Institute of Informatics and Software Engineering
KONÔPKA, Martin, Ing.	Institute of Informatics and Software Engineering
KOREŇOVÁ, Lilla, PaedDr. PhD.	Institute of Applied Informatics
KOSKOVÁ, Gabriela, Mgr. PhD.	Institute of Informatics and Software Engineering
KOSTIHOVÁ, Oľga, Ing.	Deanship – Economics
KOSTOLANSKÝ, Juraj, Bc.	Institute of Informatics and Software Engineering
KOTTMAN, Michal, Ing.	Institute of Applied Informatics
KOTOČOVÁ, Margaréta, doc. Ing. CSc.	Institute of Computer Systems and Networks
KOTULIAK, Ivan, doc. Ing. PhD.	Institute of Computer Systems and Networks

KOVÁČ, Peter, Ing.	Department of Tech. Operation and Management
KOVÁČIK, Tomáš, Ing. PhD.	Institute of Computer Systems and Networks
KOVÁROVÁ, Alena, Mgr. PhD.	Institute of Informatics and Software Engineering
KRAJČOVIČ, Tibor, doc. Ing. PhD.	Institute of Computer Systems and Networks
KRAJČOVIČ, Dušan, RNDr. CSc.	Institute of Informatics and Software Engineering
KRÁLOVIČ, Rastislav, doc. RNDr. PhD.	Institute of Informatics and Software Engineering
KRAMÁR, Tomáš, Ing. PhD.	Institute of Informatics and Software Engineering
KRAMÁROVÁ, Miroslava	Institute of Informatics and Software Engineering
KRÁTKY, Peter, Ing.	Institute of Informatics and Software Engineering
KRIŠTOFÍK, Štefan, Ing.	Institute of Computer Systems and Networks
KRIŠTOFOVÁ, Jarmila, Mgr.	Deanship – Study Affairs
KUBÁN, Peter, Ing.	Institute of Informatics and Software Engineering
KUČEČKA, Tomáš, Ing.	Institute of Informatics and Software Engineering
KUDLAČÁK, Michal, Ing.	Institute of Computer Systems and Networks
KURIC, Eduard, Ing.	Institute of Informatics and Software Engineering
KVAK, Ján, Ing.	Institute of Applied Informatics
KVASNIČKA, Vladimír, prof. Ing. DrSc.	Institute of Applied Informatics
LABAJ, Martin, Ing.	Institute of Informatics and Software Engineering
LACKO, Peter, Ing. PhD.	Institute of Informatics and Software Engineering
LACLAVÍK, Michal, RNDr. PhD.	Institute of Informatics and Software Engineering
LAKUŠOVÁ, Anna	Deanship – Economics
LANDORI, Alexander	Centre of Computing and Communication Services
LANG, Ján, Ing. PhD.	Institute of Informatics and Software Engineering
LAŠTINEC, Ján, Ing.	Institute of Applied Informatics
LAURINEC, Peter, Mgr.	Institute of Informatics and Software Engineering
LEKAVÝ, Marián, Ing. PhD.	Institute of Informatics and Software Engineering
LEŠKOVÁ, Lýdia	Department of Tech. Operation and Management
LETOVANCOVÁ, Eva, doc. PhDr. PhD.	Institute of Informatics and Software Engineering
LÓDERER, Marek, Ing.	Institute of Informatics and Software Engineering
LUCKÁ, Mária, doc. RNDr. PhD.	Institute of Informatics and Software Engineering
LUKOŤKA, Robert, RNDr. PhD.	Institute of Informatics and Software Engineering
MACKO, Dominik, Ing.	Institute of Computer Systems and Networks
MACKOVÁ, Zuzana	Institute – Secretariat
MAGULA, Peter, Ing. PhD.	Institute of Computer Systems and Networks
MAKULA, Matej, Ing. PhD.	Institute of Applied Informatics
MALINA, Dušan, Ing.	Centre of Computing and Communication Services
MÁLIŠ, Roman	Centre of Computing and Communication Services
MALKIN ONDIK, Irina, Dr.	Institute of Informatics and Software Engineering
MARINOVÁ, Petra, Mgr.	Institute of Informatics and Software Engineering

MARKO, Ľubomír, doc. RNDr. CSc.	Institute of Informatics and Software Engineering
MARKO, Peter, Ing.	Institute of Applied Informatics
MARKOŠOVÁ, Mária, doc.RNDr.PhD.	Institute of Applied Informatics
MARUŠINCOVÁ, Zuzana	Deanship – Public Relations
MATEJKA, Pavol	Department of Tech. Operation and Management
MATFIAKOVÁ, Mária, Ing.	Institute of Informatics and Software Engineering
MICHEL, Michal	Deanship – Public Relations
MIŠÍKOVÁ, Jana	Department of Tech. Operation and Management
MIŠÍKOVÁ, Zuzana	Deanship – Economics
MIŤKOVÁ, Veronika, Ing. PhD.	Institute of Informatics and Software Engineering
MOLNÁR, Ľudovít, prof. RNDr. DrSc.	Institute of Informatics and Software Engineering
MOLNÁR, Oto	Department of Tech. Operation and Management
MORAVCSÍK, Attila, Mgr.	Institute of Informatics and Software Engineering
MÓRO, Róbert, Ing.	Institute of Informatics and Software Engineering
MRŠKOVÁ, Katarína, RNDr. PhD.	Deanship – Secretariat
MUNKA, Juraj, PaedDr.	Institute of Computer Systems and Networks
MURÁNYI, Ján, Ing.	Institute of Computer Systems and Networks
NAGY, Martin, Ing.	Institute of Computer Systems and Networks
NAGY, Roman, RNDr.	Institute of Informatics and Software Engineering
NÁVRAT, Pavol, prof. Ing. PhD.	Institute of Informatics and Software Engineering
OBETKO, Jakub, Ing.	Institute of Computer Systems and Networks
OLAH, Vladimír, Ing. PhD.	Institute of Informatics and Software Engineering
OLŠOVSKÝ, Michal, Ing. PhD.	Institute of Computer Systems and Networks
ORLOVSKÝ, František	Department of Tech. Operation and Management
PALATINUSOVÁ, Ľubica, Ing.	Faculty Secretary
PÁLFY, Juraj, Ing. PhD.	Institute of Applied Informatics
PALÚCH, Peter, Ing.PhD.	Institute of Computer Systems and Networks
PAPRČKA, Michal, Ing.	Institute of Applied Informatics
PAPULA, Jozef, prof. Ing. PhD.	Institute of Informatics and Software Engineering
PAULOVIC, Aurel, Ing.	Institute of Informatics and Software Engineering
PEREŠÍNI, Ondrej	Institute of Computer Systems and Networks
PEŠEK, Radovan	Centre of Computing and Communication Services
PETROVIČ, Pavel, Mgr. PhD.	Institute of Applied Informatics
PIKULIAK, Matúš, Bc.	Institute of Informatics and Software Engineering
PIOVARČI, Michal, Mgr.	Institute of Informatics and Software Engineering
PIŠTEK, Peter, Ing. PhD.	Institute of Computer Systems and Networks
PLEŠKO, Ivan, Ing.	Institute of Applied Informatics
POKORNÝ, Jaroslav, prof. RNDr. CSc.	Institute of Informatics and Software Engineering
POLÁŠEK, Ivan, Ing. PhD.	Institute of Informatics and Software Engineering

POSPÍCHAL, Jiří, prof. RNDr. DrSc.	Institute of Applied Informatics
POTOČNÝ, Marián, Mgr.	Institute of Informatics and Software Engineering
POVAŽANOVÁ, Anna, Ing.	Institute of Informatics and Software Engineering
PRIBIŠOVÁ, Katarína, Ing.	Institute – Secretariat
PŠENKOVÁ, Judita, Mgr.	Institute of Computer Systems and Networks
RÁSTOČNÝ, Karol, Ing.	Institute of Informatics and Software Engineering
RENDEKOVÁ, Gabriela	Centre of Information and Library Services
ROŠTECKÝ, Richard	Institute of Computer Systems and Networks
ROZINAJOVÁ, Viera, doc. Ing. PhD.	Institute of Informatics and Software Engineering
RYBÁROVÁ, Viera, Mgr. CSc.	Institute of Computer Systems and Networks
SABO, Štefan, Ing.	Institute of Informatics and Software Engineering
SABOVÁ, Erika	Deanship – Economics
SCHRAMMOVÁ, Oľga, Ing.	Deanship – Personal Resources
SIEBERT, Miroslav, Ing.	Institute of Computer Systems and Networks
SKÚPA, Katarína, Mgr.	Institute of Informatics and Software Engineering
SOLČÁNY, Viliam, Ing. PhD.	Institute of Applied Informatics
SRBA, Ivan, Ing.	Institute of Informatics and Software Engineering
STEINMÜLLER, Branislav, Ing.	Centre of Computing and Communication Services
STOVÍČEK, Roman, Ing. PhD.	Centre of Computing and Communication Services
STRNÁD, Ondrej, Ing. PhD.	Institute of Applied Informatics
SUCHAL, Ján, Ing.	Institute of Informatics and Software Engineering
SUCHAN, Martin	Centre of Computing and Communication Services
SUKUBA, Ivan, Mgr.	Institute of Informatics and Software Engineering
SZABÓ, Rastislav, Ing.	Institute of Applied Informatics
ŠAJGALÍK, Márius, Ing.	Institute of Informatics and Software Engineering
ŠALOUN, Petr, doc. RNDr. PhD.	Institute of Informatics and Software Engineering
ŠELENG, Martin, Mgr. PhD.	Institute of Informatics and Software Engineering
ŠELMECI, Roman, Ing.	Institute of Informatics and Software Engineering
ŠELMECIOVÁ, Mária	Deanship – Economics
ŠEŠERA, Eubor, RNDr. PhD.	Institute of Informatics and Software Engineering
ŠEVCECH, Jakub, Ing.	Institute of Informatics and Software Engineering
ŠIMKO, Marián, Ing. PhD.	Institute of Informatics and Software Engineering
ŠIMKO, Jakub, Ing. PhD.	Institute of Informatics and Software Engineering
ŠÍPKOVÁ, Tatiana	Institute – Secretariat
ŠOLTÉSOVÁ, Danica, Mgr. PhD.	Institute of Informatics and Software Engineering
ŠPIČKA, Ján, Ing.	Department of Tech. Operation and Management
ŠTEFANOVIČ, Juraj, Ing. PhD.	Institute of Applied Informatics
ŠTOFKA, Marián, Ing. CSc.	Institute of Informatics and Software Engineering
ŠUBÍN, Juraj	Institute of Computer Systems and Networks

ŠULÁK, Viktor	Institute of Computer Systems and Networks
ŠURÁB, Marian, doc. ThDr. PhD.	Institute of Informatics and Software Engineering
TOMALOVÁ, Elena, Ing.	Institute of Computer Systems and Networks
TRÚCHLY, Peter, Ing. PhD.	Institute of Computer Systems and Networks
TURCSÁNY, Matúš, Ing. PhD.	Institute of Computer Systems and Networks
TURSKÝ, Lukáš, Ing.	Institute of Applied Informatics
TVAROŽEK, Jozef, Mgr. PhD.	Institute of Informatics and Software Engineering
UŠÁK, Elemír, doc. Ing. PhD.	Institute of Informatics and Software Engineering
VAJDA, Tomáš, Mgr.	Institute of Informatics and Software Engineering
VILHAN, Peter, Ing. PhD.	Institute of Applied Informatics
VOJTKO, Martin, Ing.	Institute of Computer Systems and Networks
VRABLECOVÁ, Petra, Ing.	Institute of Informatics and Software Engineering
VRANIĆ, Valentino, doc. Ing. PhD.	Institute of Informatics and Software Engineering
VÝBOHOVÁ, Andrea, Ing.	Deanship – Study Affairs
WINCZER, Michal, RNDr. PhD.	Institute of Informatics and Software Engineering
ZAKÁLOVÁ, Alexandra, Ing.	Institute of Informatics and Software Engineering
ZÁKOPČAN, Michal, Mgr. PhD.	Institute of Informatics and Software Engineering
ZBELL, Pavol, Bc.	Institute of Informatics and Software Engineering
ZELENÍK, Dušan, Ing. PhD.	Institute of Informatics and Software Engineering
ZELISKA, Peter	Department of Tech Operation and Management
ZEMANOVÁ, Alena, PhDr.	Institute of Informatics and Software Engineering
ŽILKA, Tomáš, Mgr.	Institute of Informatics and Software Engineering
ŽILKOVÁ, Viktória, Mgr.	Institute of Informatics and Software Engineering

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