**Faculty of Informatics
and Information Technologies**

ANNUAL REPORT

2013

STU
FIIT

Contents

1 Message from the dean

In the year 2013 the Faculty of Informatics and Information Technologies STU in Bratislava celebrated the 10th anniversary of its establishment. This jubilee has motivated us to look round for our achievements as well as for the definitions of our next objectives.

In ten years of our activity, the FIIT STU in Bratislava has educated 1200 engineers, 1500 bachelors and 50 doctors in two major study programs – Informatics and Computer and Communications Systems and Networks.

For our work, an important criterion of evaluation is a list of the most desirable graduates. This list shows that our graduates are placed in the first positions. Their versatility along with their commencing salary is a sign that education at our faculty is in the right direction.

To maintain this trend, we constantly communicate with companies, our partners and with the main „consumers" of our students. The market in the field of Informatics has been changing dynamically and therefore without their opinions we would not be able to keep abreast.

What did we succeed? Many students´ teams have been successful in various international competitions and they achieved interesting awards. Students´ team „Speekle", expect for participation in the international competition „Imagine Cup", won the Slovak competition „Business plan of the year" and its product was reversed into the start-up project which has its own company and lives its own life.

Similar accomplishments are for our faculty the best benchmarks of its effort. Along with practical knowledge, our students show their viability and fighting spirit.

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 2013

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 Šimko
chairman of the student section

Secretary of the Academic Senate
`secretary@as.fiit.stuba.sk`

    Mária Hricová

Members of the faculty section of the Academic Senate
`staff@as.fiit.stuba.sk`

    Dušan Bernát

    Mária Bieliková, Professor (since Oct. 2013)

    Miroslav Galbavý

    Ján Hudec (till Oct. 2013)

    Ladislav Hudec, Assoc. Professor

    Gabriela Kosková

    Margaréta Kotočová, Assoc. Professor (since Oct. 2013)

    Pavol Návrat, Professor

    Juraj Štefanovič

    Peter Trúchly (till Oct. 2013)

Members of the student section of the Academic Senate
`students@as.fiit.stuba.sk`

    Barbora Pavlíková (since Oct. 2013)

    Peter Pištek

    Jakub Ševcech

    Veronika Štrbáková

    Jakub Šimko (till July 2013)

Activities of the Academic Senate of the Faculty in 2013

The Academic Senate of the Faculty of Informatics and Information Technologies in 2013

- 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.

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Prof. Pavol Návrat
Chair Academic Senate FIIT STU

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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 2013

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 Návrat, 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 2013

The Scientific Board of the Faculty of Informatics and Information Technologies in 2013:

- – 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 2013/14 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 2013

Chair of the Disciplinary Commission of the Faculty for Students

Ladislav Hudec, Assoc. Professor

Members of the Disciplinary Commission of the Faculty for Students

Boris Dado (since September 2013)

Ivan Kapustík

Juraj Štefanovič

Ľubomír Varga – student of the doctoral degree programme (till September 2013)

Peter Jurík – student of the doctoral degree programme (since September 2013)

Valeria Harvanová – student of the master degree programme (till September 2013)

Martin Janík – student of the master degree programme (since September 2013)

Matúš Michalko – student of the master degree programme

Jana Podlucká – student of tha bachelor degree programme (since September 2013)

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

3 Study

3.1 Undergraduate Study (Bc)

In the academic year 2013/14 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

		1st year	2nd year	3rd year	4th year[1]
Academic year	2003/2004[1]	150	103	123	134
	2004/2005	333 (216/117)	112 (60/52)	95[1]	156
	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+52/110+25)	214 (161/53)	156 (109/47)	-
	2013/2014	501(258+67+127+49)	262(177+55+18+12)	199(142+57)	-

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.

On the course we have 3 overseas students.

In June 2013 the students defended their bachelor theses and passed the final examination. The number of all graduates was 120. Thereof, there were 69 in study programme Informatics and 31 in study programme Computer Systems and Networks.

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[1] Only the students in study programme Informatics.

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

- *"Magna cum laude":* Kamil Burda, Peter Demčák, Dávid Durčák, Tomáš Jánošík, Patrik Polatsek, Miroslav Šimek

- *"Cum laude":* Ondrej Galbavý, Marek Jakab, Samuel Molnár, Martin Petluš, Veronika Štrbáková

- *Dean's Award for Excellent Bachelor Thesis:* Kamil Burda, Miroslav Šimek, Patrik Polatsek

- *Dean's Commendatory Letter for Bachelor Thesis:* Kamil Burda, Peter Demčák, Marek Hasin, Marek Jakab, Tomáš Jánošík, Šimon Kompas, Matej Marcoňák, Patrik Polatsek, Daniel Soós, Miroslav Šimek, Erik Šuta, Timotej Tkáč

1094 applicants took part in the entrance examination to bachelor study programmes (635+218 applicants for study programme Informatics, 157+84 applicants for study programme Computer and Communication Systems and Networks). 787 applicants were offered admission, 503 out of them actually made use of it and were enrolled (258+128 Informatics, 68+49 Computer Systems and Networks).

3.2 Master Study (Ing)

In 2013, FIIT STU offered three accredited study programmes with regular length two or three years[2]:

- *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

On the course we have 6 overseas students.

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

In these study programmes 110 students graduated in June 2013 (57 in Software Engineering, 28 in Computer and Communication Systems and Networks, 25 in Information Systems).

- *"Magna cum laude":* Ján Súkeník

- *"Cum laude":* Michal Fornádeľ, Filip Grznár, Marek Hlaváč, Róbert Horváth, Peter Krátky, František Kudlačák, Ján Laštinec, Štefan Mitrík, Ondrej Perešíni, Jakub Ševcech, Maroš Ubreži, Petra Vrablecová, Michal Žilinčík

- *Dean′s Award for Excellent Master Thesis:* František Kudlačák, Ján Súkeník, Michal Žilinčík

- *Institute of Inf., Slovak Academy of Sciences Award for Excellent Master Thesis:* Ondrej Perešíni, Jakub Ševcech

- *Dean's Commendatory Letter for Master Thesis*: Filip Grznár, Martin Habdák, Marek Hlaváč, Róbert Horváth, Martin Hreha, Peter Krátky, Peter Macko, Ondrej Perešíni, Jakub Ševcech, Petra Vrablecová

139 applicants took part in an entrance examination to the master programmes. 162 students were offered admission, 149 out of whom were enrolled.

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 1.5 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 − 7 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	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Num of students	11	16	22	22	24	25	30	34	43	48	47	47

In 2013 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 2013 following dissertations were defended:

- *Tomáš Kuzár:* Clustering on Social Web (Software Systems, supervisor: Pavol Návrat)

- *Peter Kajsa:* Models of Software Systems: Design Pattern Support (Software Engineering, supervisor: Pavol Návrat)

- *Jakub Šimko:* Harnessing manpower for creating semantics (Software Engineering, supervisor: Mária Bielková)
- *Binh Minh Nguyen:* High - Level Abstraction Layer for Development and Deployment of Cloud Services (Applied Informatics, supervisor: Ladislav Hluchý)
- *Jakub Breier:* Security Evaluation Supported by Information Security Mechanisms (Applied Informatics, supervisor: Ladislav Hudec)
- *Martin Hrubý:* Optimization of Network Traffic Flow (Applied Informatics, supervisor: Margaréta Kotočová)
- *Michal Olšovský:* Advanced Notification System for TCP Performance Increase (Applied Informatics, supervisor: Margaréta Kotočová)

3.4 Student Conferences and Competitions

The Faculty organised and supported in 2013 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
- 1nd place, Slovak finals of the Imagine Cup 2013 competition: Peter Demčák, Ondrej Galbavý, Miroslav Šimek, Veronika Štrbáková (supervisor: M. Barla) advanced to the Imagine Cup 2013 Worldwide Finals, Saint Petersburg, Russia

IIT.SRC 2013 – Informatics and Information Technologies Student Research Conference (to be mentioned in the following section in more detail)

NAG 2013 – national CISCO competition
- Viliam Straka – 3rd place in category PT
- Tomáš Boroš – 5th place in category UNI

Cross-Innovation Voucher
- Andrej Fogelton – 1nd place with project EyeBlink.

Splendid Yong Businessmen
- Peter Demčák, Ondrej Galbavý, Miroslav Šimek, Veronika Štrbáková – 1st place with their project "Speekles" in the final of the competition of University projects "Excellent young enterprisers", organized by JA SR in cooperation with Hyundai Motor Slovakia

ACM SPY – Student Project of the Year Czech and Slovak Competition
- Ján Súkeník – was among the winners of the winners and presented his project in the ACM SPY 2013 Finals, 4th place with diploma project Source Code Analysis Using Abstract Syntax Trees (supervised by P. Lacko)

Creativity and Innovation Challenge 2013
- Martin Nagy, Andrej Sedláček, Ivan Šimko – 1st place in a competition specialized on challenge solution in the field of international company marketing organized by JA SR in a cooperation with Microsoft Slovakia within the YouthSpark project

RoboCup, Soccer Simulation League

–   Winners of the Slovak University of Technology RoboCup 2013, 3D
    Team Jimbros: Lukáš Ďurčík, Peter Paššák

Social Impact Award

–   Andrej Fogelton – 2nd place with project EyeBlink

TP Cup

–   Best Team of the year 2013 winners: Ľuboš Demovič, Eduard Fritscher, Jakub Kříž,
    Ondrej Kuzmík, Ondrej Proksa, Diana Vandlíková: Televido - My Personalized
    TV, supervisor: D. Zeleník

ACM ICPC

–   2nd place within participating slovak universities, advanced to Middle European
    regional round in Krakow (Filip Pakan, Adrian Kollár)

–   3rd place within participating slovak universities, advanced to Middle European
    regional round in Krakow (Ladislav Gallay, Jakub Kříž, Ondrej Proksa)

IAB Slovakia

–   Róbert Móró – 3rd place with project Personalized Summarization of the Test

RobotChallenge 2013

–   Andrej Lenčucha – 1st place in Lego Sumo category with robot MTS and 1st place
    in Line Follower Enhancef category with robot Lenco (Wien, Austria).

3.5 Awarded Theses

Excellent Bachelor Theses

Student name:	Kamil Burda
Thesis title:	*Visualization of Communication in Computer and Communication Networks*
Supervisor:	Peter Magula, PhD.
Defended on:	May 2013
Degree program:	Computer and Communication Systems and Networks
Annotation:	The bachelor thesis analyzes the concept of visualization of communication in computer and communication networks. The analytical part of the thesis contains a brief review of the use of visualization in practice, techniques to obtain data from networks and visualization approaches used to visualize obtained and processed data. Based on existing taxonomies of visualization approaches, a new taxonomy is defined in the thesis, categorizing approaches according to the visual representation of the obtained data. Network topologies corresponding with communication scenarios are created in simulation environment acting as a replacement for real networks, where the data generated in the simulation environment are visualized with several visualization approaches in visualization tools used in this thesis. These visualization tools are compared with each other in terms of their features and the visualization approaches they implement for each communication scenario.

Student name:	Miroslav Šimek
Thesis title:	*Innovative Application within an International Competition*
Supervisor:	Michal Barla, PhD.
Defended on:	May 2013
Degree program:	Informatics
Annotation:	This bachelor's thesis is innovative application within the Imagine Cup competition. Our project deals with speech disorder for children. It helps to prevent many potential problems these children would have had, if they didn't succeed with their speech disorder therapy during childhood. The main idea of our project is motivation of children to practice in home environment. This practicing is actually the key part of speech disorder therapy. Visiting speech therapist is not enough. Parents today are becoming even busier than before and they simply don't have enough time to spend with their children practicing for sufficient time. This problem is getting worse, but our solution solves both of these key problems by collection of interactive games designed for practicing sounds pronunciation and oral motor skills. Practicing oral motor skills is practicing the agility of tongue and it's also very important part of speech disorder therapy. The team of four students is working on this project. The author of this thesis focused on core of the application, specifically on recognition of problematic sounds pronunciation (sibilants) and tongue tracking with Kinect and depth map. The author of this thesis bases the correctness of pronounced sound on sound wave and spectrogram analysis.

Student name:	Patrik Polatsek
Thesis title:	*Blink Rate Tracking of Computer User*
Supervisor:	Andrej Fogelton
Defended on:	May 2013
Degree program:	Informatics
Annotation:	This bachelor thesis deals with eye blink rate tracking of the user while working with computer. A user tends to decrease the blink rate in front of a computer screen, due to which the tear film is non adequately applied on the eye cornea. Lower blink rate causes eye redness and dryness. This commonly-occurring problem of computer users is called Dry Eye. The goal of the bachelor thesis is to design an eye blink detection algorithm. In future it can be used in dry eye prevention application, which will detect user's blinks. We have analysed available techniques for eye blink detection and designed our own solutions based on histogram backprojection, optical flow, frame difference and FREAK descriptor method. We have tested our algorithms on different datasets under various lighting conditions. Centre Aligned Movement Detection method based on optical flow performs better than the other ones. We achieve higher recognition rate and much lower false positive rate in the Talking Face Video dataset than the-state-of-the-art technique presented by Divjak and Bischof in 2009.

Excellent Master Theses

Student name:	František Kudlačák
Thesis title:	*Synthesis of Asynchronous Sequential Circuits*
Supervisor:	Elena Gramatová, Assoc. Professor
Defended on:	May 2013
Degree program:	Computer and Communication Systems and Networks
Annotation:	The diploma thesis deals with design of asynchronous sequential circuits, which allows to design asynchronous representation of an automat. This representation is composed from digital logic. Designed system loads the automat description in VHDL format, which is output format of the computer-aided design system HDL Designer. Output representation of the automat is in VHDL syntax, and it is possible to simulate output in the simulation environment ModelSim. Implementation of designed system includes implementation for the parallel super computing. Communication in the parallel system is provided by the communication library MPI. The thesis also contains formal description of the implemented method for design of state coding. The black box testing approach was used during the function tests, and outputs were simulated in the simulation environment ModelSim. Effectiveness of parallel implementation for super computing, was tested with different sizes of input automat, and with different numbers of computing nodes in the super computing system.

Student name:	Ondrej Perešíni
Thesis title:	*Experimental Embedded System for Intelligent Actuators Control through the Internet.*
Supervisor:	Tibor Krajčovič, Assoc. Professor
Defended on:	May 2013
Degree program:	Computer and Communication Systems and Networks
Annotation:	Diploma thesis analyses the current available options of intelligent house actuators realization and propose new own solution, which is less expensive, more robust and more secure against intrusion. The proposed solution is opened and therefore ready for the future improvements. The theoretical part of diploma project characterises chosen hardware, encryption algorithm and the mutual communication of the independent modules. Moreover the project suggests new communication protocol at the application layer of the network stack. Separate part of project is dedicated to the description and realisation of some modules with defined specifications. These modules react with environment according to the established rules, which can be easily altered trough the user interface of the central unit. Communication interface is secure against common types of attacks and also user friendly for the better user experience. The result of this diploma project is experimental prototype of the proposed solution, which is suitable for the direct deployment in the modern households.

Student name:	Ján Súkeník
Thesis title:	*Source Code Analysis Using Abstract Syntax Trees*
Supervisor:	Peter Lacko, PhD.

Defended on:	May 2013
Degree program:	Software Engineering
Annotation:	Nowadays we use information from many different tools to support the process of software development, for example source code repositories, bug tracking systems, etc. The most accurate source of such information is the code of the software itself. We can analyse the source code, for example in order to find parts that may contain bugs. During such analysis, abstract syntax trees can enable us to ignore all the details related to text representation of the code. Duplicated code is very common source of bugs, or at least source of increased costs during software development and maintenance. According to the existing research, its aggressive refactoring can be redundant or sometimes even harmful. We therefore propose a method which enables developers to actively and continuously track duplicates during the development. It is designed so that the results can be immediately updated right after every change of the source code (small or large). We tested the method on real software projects. Based on the results, we are confident that our tool has the potential to increase quality of software projects and reduce development costs.

Student name:	Jakub Ševcech
Thesis title:	*Web Navigation Based on Annotations*
Supervisor:	Mária Bieliková, Professor
Defended on:	May 2013
Degree program:	Software Engineering
Annotation:	Currently we experience a great expansion of various services allowing us to bookmark documents and annotate them. Such annotations can be used to improve navigation, document retrieval, recommendation of documents and so on. In our work, we aim to improve navigation between documents by searching documents related to studied document using its content and attached annotations. We use annotations such as highlights and comments as indicators of user's interest in particular part of the document. Using document content and attached annotations, we are creating a query that we are using to search for related documents. When creating the query, we use an assumption that by creating annotations, user highlights parts of document, that he is most interested in. We proposed a method for using different types of annotations in creation of query to search related documents. We evaluated the proposed method by creating a tool for collecting annotations and for searching related documents using these annotations in the domain of digital libraries.

Student name:	Michal Žilinčík
Thesis title:	*Social Networks Exploratory Search Focused on Dynamical Criteria and Relationships of Metadata to Content*
Supervisor:	Pavol Návrat, Professor
Defended on:	May 2013
Degree program:	Information Systems

Annotation: Diversity of content created by users of Twitter social network provides an interesting source of information. But the diversity itself and the small space for textual content create issues for information retrieval tasks. Existing methods focus on ranking the relevance and quality of microblogs in order to make it easier for user to find interesting content. They often attempt to find the best combination of characteristics and their weights in ranking functions experimentally. This master's thesis proposes new method for exploratory search on Twitter. Instead of discovering a new ranking function that uses fixed parameters, it focuses on inventing a method for modelling user's preferences in real time. This means that during browsing content, user provides implicit and explicit feedback for tweets and based on this feedback, user's preference model for current session is trained and used for classification of unread tweets into interesting or not interesting.

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,

–   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 2013 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 2013, FIIT STU has organised or co-organised several scientific events:
- scientific conference Cognition and Artificial Life XIII,
- scientific conference Znalosti 2013,
- IEEE international conference ICETA 2013,
- scientific workshop WIKT 2013 – Workshop on Intelligent and Knowledge Oriented Technologies,
- World Usability Day 2013 (organized at FIIT STU),
- regular scientific seminar on Artificial Intelligence (organized at FIIT STU),
- regular scientific seminar on Vision and Computer Graphics (FIIT STU),
- regular scientific seminar on Personalized Web (organized at FIIT STU).

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,
- EWDTS - East-West Design & Test Symposium,
- HPCC 2013 – 15th International Conference on High Performance and Communications,
- 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, Intertnational 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 2013, FIIT STU organised or co-organised several events aimed at exhibition of students' research work. Above all, the most important event was the 9th *Informatics and Information Technologies Students Research Conference – IIT.SRC 2013*, which was held on April 23, 2013.

At IIT.SRC 2013 were accepted 76 (12 bachelor, 31 master, 33 doctoral students as authors) submitted by 88 student authors, which bears as a consequence that roughly 13% of all students are actively engaged in research to the extent they are able to write a paper on it.

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:

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

The Conference was opened by a keynote of A Min Tjoa (Vienna University of Technology, Austria) titled: "The Use of Open Linked Data for Decision Making".

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

- *category of doctoral students* – Michal Olšovský (Advanced Notification System for TCP Congestion Control, supervisor M. Kotočová)
- *category of master students* – Ján Súkeník (Detection of Code Clones: Necessity or a Myth?, supervisor P. Lacko)
- *category of bachelor students* – Marek Jakab (Planar Object Recognition in an Augmented Reality Application on Mobile Devices, supervisor V. Benešová)

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

- *Daniel Soós* (Optimization Algorithm Inspired by Social Insect Behaviour in Comparison with Hill Climbing, supervisor D. Chalupa)
- *Peter Krátky* (What Makes the Best Computer Game? How Game Features Affect Game Play, supervisor J. Tvarožek)
- *Jakub Ševcech* (Related Documents Search Using User Created Annotations, supervisor M. Bieliková)
- *Karol Rástočný* (Usability of Anchoring Algorithms for Source Code, supervisor M. Bieliková)
- *Michal Kottman* (Improving Binary Feature Descriptors Using Spatial Structure, supervisor M. Šperka)

Besides the 76 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 2013 accompanying events included also programming competition, FiitaPixel – photo contest best pictures exhibition, games with a purpose tournament, RoboCup, and JUNIOR IIT.SRC.

FIIT STU initiated in 2010 a join of two Czech and Slovak 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 to establishing

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

in beginning of 2010. The ACM SPY 2013 Finals were organized in November 2013 in Prague, where 9 best master student projects were presented. The finalists projects were selected by the judges from the best thesis submitted by 13 Czech and Slovak universities based on 1513 successfuly defended master thesis in 2012/13.

The project

– *Source Code Analysis Using Abstract Syntax Trees* authored by Ján Súkeník (supervisor P. Lacko) won the 4th prize.

In September 2013 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 laic public.

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

– *NeverGetLost.apk* – Michal Dorner, Alena Kovárová

– *Innovative Computer Games* – Eduard Kuric, Karol Rástočný, Jakub Šimko

– *Speekle - speech therapy is a game* – Veronika Štrbáková, Miroslav Šimek, Ondrej Galbavý, Peter Demčák, Michal Barla

– *"How does the telecommunications operator work?"* – Miroslav Babják, Martin Nagy, Dominik Tamaškovič

– *Fun during traveling* – Martin Polák, Jan Mato, Viliam Straka, Andrej Kincel, Rastislav Bencel

– *Elevator simulator* – Jaroslav Abaffy, Maroš Ďuríček

– *Can a computer see?* – Martin Geier, Marek Račev

– *"Control everything by everything" : Configurable human-device interaction; any event can be used tocontrol any action* – Ivana Bohunická, Martin Čertek, Matúš Ujhelyi, Zuzana Ujhelyiová

4.3 Publications

Results of our research were published in 246 publications. 220 scientific contributions were published in conference proceedings, 85 out of which were published in reviewed proceedings of international conferences. 23 scientific contributions were published in scientific journals and we have authors (co-authors or editors) of 3 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. Návrat, V. Kvasnička and J. Pospíchal were active in the editorial team in 2013 – P. Návrat 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.

Number of publications in 2013	UAPI[3]	UISI	UPSS	FIIT
Books and parts of books published by international/national publisher	1-/-	0/-	1/1	-2/1
Scientific works published in international/national scientific journals	2-/4	9/-6	1/1	12/11
Scientific works published in international conference proceedings	15	36	34	85
Scientific works published in national or local conference proceedings	26	95	14	135
Conference proceedings editors	-	3	-	3

Overview of other most significant activities in 2013	UAPI	UISI	UPSS	FIIT
Membership in editorial boards of scientific journals	8	6	1	15
Membership in programme committees of international scientific conferences	7	28	10	45
Membership in programme committees of national or local scientific conferences	10	27	12	49
Membership in steering committees of scientific conferences	0	4	2	6

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[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 2013

- nine VEGA projects were progressed and three new projects were prepared for funding in 2014-2016,
- two APVV projects were progressed, and five new projects were prepared for funding in 2014-2017, (three of them were prepared in cooperation with FEI STU in Bratislava, FEI TU in Košice 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 and four projects were prepared for funding in 2014-2016 (one of them was prepared in cooperation with Faculty of Electrical Engineering and Informatics, Technical University in Košice).

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

The Faculty under the leadership of I. Kotuliak, E. Gramatová and D. Chudá participated in three international projects.

Number of projects funded in 2013	UAPI	UISI	UPSS
VEGA[4]	3[*]	3	4[*]
KEGA	1	-	-
APVV	-	2	-
European Structural Funds	-	2[†]	1[†]
International projects	-	-1	2*
Others /Tatra banka, grants for young scientif reseachers	1	6	5
FIIT STU	**4**	**8**	**7**

[*][†] common projects

Overview of funds (in Eur)	UAPI	UISI	UPSS	SUM
VEGA	10 124	37 549	18 546	66 219
KEGA	1 556			1 556
APVV	-	58 611	-	58 611
European Structural Funds	-	250 970	-	250 970
Others	2 300	6 000	9 800	18 100
FIIT STU	**13 980**	**353 130**	**28 346**	**395 456**

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[4] VEGA – Scientific Grant Agency of the Ministry of Education of Slovak Re-public 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

In 2013 two institutes of the Faculty (UPSS, UISI) together with six other institutes of the University, the Institute of Informatics Slovak Academy of Sciences and International Laser Centre progressed continuing project SMART II – Centre of Excellence for Smart Technologies, Systems and Services approved within the call of the Agency of the Ministry of Education for the Structural funds of the European Union (ERDF) under the Operational Programme Research and Development with overall budget approx. 2 214 thouthousands Eur.

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.

The projects are realized in our research laboratories (description can be found in the parts devoted to individual institutes). In 2013 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: B. Dado,

–   Networks Technology Laboratory II, manager: M. Kotočová,

–   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.

<div align="right">Assoc. Prof. Viera Rozinajová
Vice-Dean for Research</div>

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, in 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, guaranties 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. One of the new activities of the year was establishing "The Week of the Faculty and Partner Companies 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.

The Week of the Faculty and Partner Companies Cooperation

With the aim of improving cooperation with praxis the Faculty continued in a new form of cooperation with partner companies established in 2009. We organized one week serial of special lessons provided by our industry partners for our students. The second annual set of this activity was successful especially thanks to the following companies:

- Alcatel-Lucent Slovakia, a. s.
- Cisco Systems Slovakia, spol. s. r. o.
- Hewlett-Packard Slovakia, s. r. o.
- Microsoft Slovakia, s. r. o.
- Oracle Slovensko, spol. s. r. o.
- Softec, spol. s. r. o.
- Soitron, a. s.
- Morgan Stanley, Budapest

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%.

Our faculty prepared for girls various activities, such as discussions with women working in IT sector, workshops oriented to acquirement of more knowledge in IT, mentoring as a possibility to see the real life of students and courses, faculty offers. The aim is to show them that working in IT means having an interesting job, cooperation with 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.

Digipoint

FIIT STU is persuaded about the necessity to present informatics, effort and results of our students to the 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.

IT Crowd

Our career center started its activities on 1st October 2013. First workshops, explaining the necessity of a development of non-technical skills, were realized immediately. Enrolments for language courses and the web portal www.fiit-crowd.sk started as well. 13 workshops connected to the development of non-technical skills were organized in winter term with a participation of more than 130 students.

Students and employees had an opportunity to be a part of language courses under the leadership of a professional lector. In winter term, 8 weeks long courses were opened for 4 languages (English, German, Spanish, and Japanese).

Our career center iniciated many meetings with IT and Telecomunication companies for the purpose of raising partnerships and support activities. Our successful cooperation with industry leads into these results:

– successful running of the course "Architecture of mobile networks" in partnership with the company Ericsson Slovakia and Alcatel-Lucent Slovakia

– accomplishment of the lecture „Information Security Management in Large Enterprise Environment" by the specialist from the company First Data Slovakia within the course "Principles of information security"

– cooperation with Christopher Larsson in the field of modelling and optimalization of computer networks with the potential of an individual course, team projects, bachelor and diploma works as well as a common research cooperation with Slovak Telekom.

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

– Aarhus University School of Engineering – DK ARHUS01

– Talinn University of Technology – EE TALLINN04

– Lahti University of Applied Sciences – SF LAHTI11

– Lancaster University – UK LANCAST01

– Ecole Pour l´Informatique et les Techniques Avancées – F BICETRE02

– Institut Catholique de Paris – F PARIS052

– Telecom SudParis – F EVRY01

– University of Piraeus – G PIREAS01

– Polytechnic of Zagreb – HR ZAGREB05

– University of Zagreb – HR ZAGREB01

– Brandenburgische Technische Universität Cottbus – D COTTBUS01

- Hochschule fur Telekommunikation Leipzig – D LEIPZIG10
- Jade University of Applied Sciences – D WILHELM02
- Technische Universität Darmstadt – D DARMSTA01
- University of Bergen – N BERGEN01
- Akademia Techniczno-Humanistycza w Bielsku-Bialej – PL BIELSKO02
- Maria Curie-Skłodowska University – PL LUBLIN01
- Technische Universität Wien – A WIEN02
- Univerza v Mariboru – SI MARIBOR01
- Universidad de Alcalá – E ALCAL-H01
- Universidad Politecnica de Madrid – E MADRID05
- Universitat Politécnica de Catalunya E BARCELO03
- Hogskolan Halmstad – S HALMSTA01
- Hogskolan Väst – S TROLLHA01
- Linnaeus university – S VAXJO03
- Universita della Calabria – I COSENZA01
- Cukurova Universitesi – TR ADANA01

In 2013, 2 incoming Erasmus students have visited FIIT STU. In 2013, 17 students of our faculty were approved for Erasmus-mobility abroad for various destinations.

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

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,

- – 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 institutes.

<div align="right">

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

Lucia Falbová
Slovak Informatics Library

</div>

7 Institute of Applied Informatics

E-mail:	uapi@fiit.stuba.sk
Web:	http://www.uapi.fiit.stuba.sk/
Tel:	+421 918 687 989
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

Teaching Staff
Vanda Benešová, PhD.
Michal Čerňanský, Assoc. Professor
Peter Drahoš, PhD.
Miroslav Galbavý
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.
Peter Trebatický, PhD. (till January 2013)

Full time PhD Students
Jakub Breier (till October 2013)
Ladislav Clementis
Andrej Fogelton
David Chalupa
Peter Jurík
Michal Kottman
Ján Kvak
Ján Laštinec (since September 2013)
Miroslav Makýš
Peter Marko
Juraj Pálfy
Rastislav Szabó
Lukáš Turský (since September 2013)
Ľubomír Varga (till August 2013)
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

Course	Semester	Credits	Lecturer
Principles of Computer Graphics and Image Processing	Autumn	6	P. Drahoš
Basic Methods of Multimedial Content Development	Autumn	6	P. Kapec
Basic of Interactive Application Development	Spring	6	P. Drahoš
Modelling and Simulation	Spring	6	J. Štefanovič

Master Study (Ing.)

Course	Semester	Credits	Lecturer
Cognitive Science	Spring	6	V. Kvasnička
Machine Learning	Autumn	6	J. Pospíchal
Evolutionary Algorithms	Spring	6	J. Pospíchal
Neural Networks	Autumn	6	M. Čerňanský
Architecture of Computer Systems	Autumn	6	
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
Security and Management of Information Systems	Autumn	5	O. Strnád
Advanced Methods of Computer Graphics	Autumn	6	P. Drahoš
Data Visualisation	Spring	6	P. Kapec

7.3 Theses

Bachelor (Bc.) Theses – graduates 2013

Study Programme Informatics

– Blanárik, Filip: *Model Driven Evolution in Rule-based System*.
   Supervisor: L. Clementis

– Brndiarová, Gabriela: *The Combination of Deterministic and Force-directed Graph Layout Algorithms*. Supervisor: P. Kapec

– Bucko, Jaroslav: *Application for Creation and Management of Udev Rules on Linux Platform*. Supervisor: P. Vilhan

– Černý, Róbert: *The Use of Elearning Tools for Designing, Creating and Editing Timetables*. Supervisor: M. Galbavý

– Dobšovič, Rastislav: *Optical Music Recognition*. Supervisor: V. Benešová

- Durčák, Dávid: *The Usage of Multiagent Evolutionary Algorithm in the Problem of Artificial Intelligence*. Supervisor: D. Chalupa

- Gášpár, Roland: *Virtual Museum*. Supervisor: J. Štefanovič

- Gloger, Michael: *Three Dimensional Griddlers Game*. Supervisor: P. Trebatický

- Grešlíková, Zuzana: *Evolutionary Clustering for Traveling Salesman Problem*. Supervisor: J. Pospíchal

- Handzuš, Ján: *Rendering and Capture of Lightfield Images on Mobile Device*. Supervisor: P. Drahoš

- Hlaváč, Patrik: *System for Children's Box of Brick*. Supervisor: P. Trebatický

- Jakab, Marek: *Augmented Reality on Mobile Devic*. Supervisor: V. Benešová

- Juranyi, Michal: *Automatic Documentation Generation from Source Codes*. Supervisor: P. Kapec

- Kósa, Péter: *Generating Documentation from Source Code*. Supervisor: P. Kapec

- Linner, Štefan: *Model Driven Evolution in Rule-Based System*. Supervisor: L. Clementis

- Marcin, Jozef: *The Use of Elearning Tools for Preparing, Creating and Editing Schedules*. Supervisor: M. Galbavý

- Marušáková, Mária: *Interactive Presentation in Visual Exploring*. Supervisor: J. Štefanovič

- Novotná, Katarína: *Study of the Relationship between a Recurrent Neural Network with Logical Neurons and a Finite-state Machine (Automaton)*. Supervisor: V. Kvasnička

- Oriskó, Patrik: *Generating Documentation from Source Code*. Supervisor: P. Kapec

- Paučo, Martin: *The Optimization of Control Laws in Problems of Multiparametric Programming*. Supervisor: J. Števek

- Petráš, Michal: *E-learning System for Teaching Network Security*. Supervisor: J. Breier

- Petrík, Juraj: *Computer Equipment Management Support*. Supervisor: B. Steinmüller

- Podmajerský, Ján: *Interactive Whiteboard*. Supervisor: A. Fogelton

- Polatsek, Patrik: *Blink Rate Tracking of Computer User*. Supervisor: A. Fogelton

- Rabčan, Juraj: *Finding Motifs in Stuttering Speech*. Supervisor: J. Pálfy

- Scholtz, Michael: *Augmented Reality Application*. Supervisor: M. Kottman

- Soós, Daniel: *Study of the Contribution of Artificial Life in Optimization*. Supervisor: D. Chalupa

- Ševčík, Michal: *Interactive Presentation for Visual Exploring*. Supervisor: J. Štefanovič

- Štrba, Patrik: *Computer Equipment and Management Support*. Supervisor: B. Steinmüller

- Šuba, Michal: *Synchronization of Text and its Audio Form*. Supervisor: P. Marko

- Šuster, Matej: *Tool for Process Visualization in Computer Vision.*
  Supervisor: M. Kottman

- Trégerová, Martina: *Deformation of 3D Geometry of Character While Animating with Dual Quaternions.* Supervisor: P. Drahoš

- Vojtuš, Miroslav: *Virtual Museum.* Supervisor: J. Štefanovič

Master (Ing.) Theses – Graduates 2013

Study Programme Information Systems

- Jalcová, Zuzana: *Use of the Multiagent Environment to Support the Creation of Timetables.* Supervisor: M. Galbavý

- Forus, Samo: *Automated Remote Desktop Supervision.* Supervisor: B. Steinmüller

- Hlavenka, Marián: *Design of Experimental Expert System for Risk Analysis and Management in the Field of Information Security.* Supervisor: M. Galbavý

- Holák, Peter: *Mutli-Agent Environment in University Timetable Creation.*
  Supervisor: M. Galbavý

- Kubis, Viliam: *Innovative Integrated Development Environment for Lua Language.*
  Supervisor: P. Kapec

- Mačuga, Peter: *Coevolution as Intensification Factor in Evolutionary Algorithms.*
  Supervisor: V. Kvasnička

- Pomothy, Adam: *Qualified Electronic Signature via Mobile Phone.*
  Supervisor: J. Breier

- Tóth, Juraj: *Automated Remote Desktop Oversight.* Supervisor: B. Steinmüller

- Zálešák, Vladislav: *Using Multi-Agent Systems for Image Segmentation.*
  Supervisor: V. Benešová

Study Programme Software Engineering

- Aufricht, Igor: *A Strategy of Movement in an Action Game.* Supervisor: Ľ. Varga

- Florek, Tomáš: *Intelligent Agent Navigation in 3D Space.* Supervisor: Ľ. Varga

- Gajdoš, Martin: *Movement Prediction within Action Game Environment.*
  Supervisor: Ľ. Varga

- Grznár, Filip: *Visualization of Dynamics of Program Written in C# Language.*
  Supervisor: P. Kapec

- Hašto, Branislav: *Initialization of Communication via the Gestures by Movements with Mobile Devices.* Supervisor: M. Čerňanský

- Hlaváč, Marek: *Using Grammatical Swarm for Evolving Agent in the Game Robocode.* Supervisor: J. Pospíchal

- Hurban, Tomáš: *Hair Simulation and Visualization Using GPU.*
  Supervisor: P. Drahoš

- Jendrej, Maroš: *A Man on the Scene with Augmented Reality.*
  Supervisor: J. Štefanovič

- Kuka, Radovan: *Gesture Recognition.* Supervisor: V. Benešová

- Macho, Jozef: *Modelling and Visualization of Hydrologic Data Using GIS.* Supervisor: M. Galbavý

- Malacký-Bakay, Ladislav: *Neural Networks with Use of Graphic Processors.* Supervisor: P. Trebatický

- Pečík, Rastislav: *Agents in Multi-agent Environment for Scheduling Problem.* Supervisor: M. Galbavý

- Polák, Vladimír: *Visualisation of Large Graphs.* Supervisor: P. Kapec

- Pribula, Eduard: *Using Methods of Constrain Satisfaction Problem for Automated Timetabling.* Supervisor: M. Galbavý

- Ruman, Vladimir: *Innovative Platform-Independent VPN Client.* Supervisor: P. Vilhan

- Šimko, Ivan: *Interactive Presentation of Software Metrics.* Supervisor: P. Kapec

- Turský, Lukáš: *Position and Orientation Tracking in 3D Space Aimed for Mobile Device.* Supervisor: M. Kottman

- Ubreži, Maroš: *Evolutionary Solution of Solitaire Type Card Game.* Supervisor: J. Pospíchal

- Valluš, Michal: *Parallel Graph Processing on Mobile Platform.* Supervisor: M. Čerňanský

- Zachar, Radoslav*: Evolutionary Algorithm for Finding the Shortest Common Supersequence.* Supervisor: J. Pospíchal

Doctoral (PhD.) Theses

Student name: Jakub Breier
Degree program: Applied Informatics
Thesis title: *Security Evaluation Supported by Information Security Mechanisms*
Supervisor: Ladislav Hudec, Associate Professor
Defended on: October 25, 2013
Annotation: Information security plays a key role in protection of organization's assets. There exist a number of standards and guidelines providing huge lists of security controls that, if properly used, might be useful against cyber threats. However, these standards leave the process of controls selection to the organizations. Security manager has to carry out a decision on implementation of security controls. Deciding which controls should be encompassed and which bypassed could be tough and indeterminate, since di erent sources usually prefer another solutions. This work presents motivation for using metrics as an instrument for a risk analysis. The main goal of this work is to dene proper security evaluation model for an organization, based on the score of security mechanisms. We present a mathematical model of evaluation, which minimizes subjectivity in this process and it should lead to more automatized risk analysis and make the results of the analysis more comparable. Our work is based on the ISO/IEC 27002 standard on which is built our evaluation model.

7.4 IIT.SRC Students' Papers

Full papers

– Fogelton, Andrej: *Superpixel Image Clustering*. Supervisor: V. Benešová

– Chalupa, David: *Asymptotical Sparseness of a Slovak Social Network*.
  Supervisor: J. Pospíchal

– Jakab, Marek: *Planar Object Recognition in an Augmented Reality Application on Mobile Devices*. Supervisor: V. Benešová

– Kottman, Michal: *Improving Binary Feature Descriptors Using Spatial Structure*.
  Supervisor: M. Šperka

– Polatsek, Patrik: *Eye Blink Detection*. Supervisor: A. Fogelton

– Slotík, Igor: *Using the Methods of Artificial Intelligence in Network Detection Mechanisms*. Supervisor: L. Hudec

– Soós, Daniel: *Optimization Algorithm Inspired by Social Insect Behaviour in Comparison with Hill Climbing*. Supervisor: D. Chalupa

– Szabó, Rastislav: *Identification of Vulnerable Parts of Web Applications Based on Anomaly Detection*. Supervisor: L. Hudec

– Vilhan, Peter: *Improving Deployability of PKI in MANET Networks Routed by B.A.T.M.A.N. Advanced*. Supervisor: L. Hudec

Extended abstracts

– Kvak, Ján: *Creating and Recognizing Visual Words Using Sparse Distributed Memory*. Supervisor: J. Štefanovič

– Ruman, Vladimír: *Innovative Platform-Independent VPN Client*.
  Supervisor: P. Vilhan

TP CUP Competition

– Antala, Ján – Čertek, Martin – Gondár, Jakub – Grman, Ondrej – Hudačinová, Silvia – Igaz, Michal – Sámela, Richard: *Re-Imagining User Interface*.
  Supervisor: V. Benešová

– Bohunická, Ivana – Greppel, Ján – Muránsky, Juraj – Nagy, František – Rerko, Dominik – Ujhelyi, Matúš – Ujhelyiová, Zuzana: *Intuitive Control of Multimedia Home*. Supervisor: M. Kottman

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:	J. Breier, M. Galbavý, P. Jurík, P. Marko, V. Solčány, R. Szabó, P. Vilhan, J. Laštinec
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.

EyeBlink – Frequency Detection of Eye Blinks of Computer User (2012et009)

Project leader:	A. Fogelton
Members UAPI:	V. Benešová, M. Kottman
Supported by:	Tatra banka Foundation
Duration:	February 2013 – November 2013
Description:	The goal of our applied research is the development of the original application eyeBlink, which will be able to detect eye blinks of computer user by ordinary webcam. Frequency of eye blinks will be evaluated with the purpose to help people with dry eye syndrome. It is a very common disease, about 70% of people who work with computer every day complaints about symptoms (about 40% of Europeans work with computer every day more than 4 hours). It is so, because humans blink subconsciously less in front of the monitor and the eyes are not moistened sufficiently with the tear film. This causes the eye to dry and to lose its natural protection. Innovative application will monitor the eye blink frequency of the given computer user and based on this frequency user will be notified to blink consciously to protect his eyes from drying. There will be several students participating on this project. Their subtasks will contribute to the final result. After a year we assume the algorithm precision about 70-80%. Students will communicate not only with supervisors but also between themselves. They will cooperate with experts from ophthalmology clinic on evaluating the eye blink frequency and determining the notification characteristics to relieve symptoms of dry eye. Prototype will be placed at ophthalmology clinic with the purpose of further research to study the relation between the eye blink frequency and the dry eye syndrome. This research should also help us to provide user further information how conscious blinks can help them with dry eye syndrome.

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, P. Trebatický
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 im-

portant 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 application 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, V. Kvasnička, J. Pálfy, P. Trebatický
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.

Integration of Study of Processing Visual Information and Creating Complex Educational Multimedia Materials (KEGA 068UK-4/2011)

Project leader:	V. Benešová
Supported by:	Cultural and Educational Grant Agency of the Slovak Republic (KEGA) Ministry of Education SR
Duration:	January 2011 – December 2013
Description:	The main goals of the project are: (i) redaction of all courses in the field of Visual Information Processing on both universities with the aim of conformity of their sylabus, (ii) new modern textbook in the Slovak language – this is the most important deliverable of this project. A teaching textbook for courses in the field of "Digital Image processing" and "Computer vision" is still missing in slovak language, (iii) Multimedia teaching materials inclusive exercises on DVD and online platform, (iv) English-Slovak glossary of tech. terms in these fields, which currently lacks a frequently used English version dates.

7.7 Publications

Journals

DRAVECKÝ, M. - PÁLFY, J. - RUSKO, M.: The Automatic Speech Recognition of Several Speakersi Acoustically Challenging Environments. In: *Fyzikálne faktory prostredia*, Vol. III, No. 2 (2013). ISSN 1338-3922. pp. 87-90. (in Slovak).

KAPEC, P. - PAPRČKA, M. - PAŽITNAJ, A. - POLÁK, V.: Exploring 3D GPU-accelerated Graph Visualization with Time-traveling Virtual Camera. In: *Journal of Theoretical and Applied Computer Science*. Vol. 7, No. 2 (2013), ISSN 2300-5653. pp. 16-30.

KOTTMAN, M.: Improving Binary Feature Descriptors Using Spatial Structure. In: *Information Sciences and Technologies*. Bulletin of the ACM Slovakia. Vol. 5, No. 2 (2013), ISSN 1338-1237. pp. 32-35.

International Conferences

BREIER, J. - HUDEC, L.: On Identifying Proper Security Mechanisms. In: *Lecture Notes in Computer Science*. Vol. 7804, Information and Communication Technology, International Conference, ICT-EurAsia 2013, Yogyakarta, Indonesia. Berlin - Springer, 2013. pp. 285-294.

BREIER, J. - HUDEC, L.: On selecting critical security controls. In: ARES 2013. Proceedings 2013 International Conference on Availability, Reliability and Security, Regensburg, Germany. Los Alamitos - IEEE Computer Society, 2013. pp. 582-588.

CLEMENTIS, L.: Learning Classifier System Improvement Based on Probability Driven and Neural Network Driven Approaches. In: *ECBS-EERC 2013*. 2013 IEEE Third Eastern European Regional Conference on the Engineering of Computer Based Systems, Budapest, Hungary. Piscataway - IEEE Computer Society, 2013. pp. 143-148.

CLEMENTIS, L.: Model Driven Classifier Evaluation in Rule-Based System. In: *Advances in Intelligent Systems and Computing*. Vol. 188, Soft Computing Models in Industrial and Enviromental Applications - 7th International Conference SOCO´12, Ostrava, Czech Republic. Berlin - Springer Verlag, 2013. pp. 267-276.

CLEMENTIS, L.: Supervised and Reinforcement Learning in Neural Network Based Approach to the Battleship Game Strategy. In: *Advances in Intelligent Systems and Computing*. Vol. 210, Nostradamus 2013- Prediction, Modeling and Analysis of Complex Systems. Berlin - Springer, 2013. pp. 191-200.

CHALUPA, D.: Adaptation of a Multiagent Evolutionary Algorithm to NK Landscapes. In: *GECCO 2013*. Proceedings of the Genetic and Evolutionary Computation Conference Companion. Amsterdam, Netherlands. New York - ACM, 2013. pp. 1391-1398.

CHALUPA, D.: An Analytical Investigation of Block-based Mutation Operarors for Order-based Stochastic Cligue Covering Algorithms. In: *GECCO 2013*. Proceedings of the Genetic and Evolutionary Computation Conference Companion, Amsterdam, Netherlands. New York - ACM, 2013. pp. 495-502.

CHALUPA, D. - POSPÍCHAL, J.: Metaheuristically Optimized Multicriteria Clustering for Medium-Scale Networks. In: *Advances in Intelligent Systems and Computing*. Vol. 188, Soft Computing Models in Industrial and Enviromental Applications, 7th International Conference SOCO´12, Ostrava, Czech Republic. Berlin - Springer Verlag, 2013. pp. 337-346.

CHALUPA, D.: Solving Clique Covering in Very Large Sparse Random Graphs by a Technique Based on k-Fixed Coloring Tabu Search. In: *Lecture Notes in Computer Science*. Vol. 7832, Evolutionary Computation in Combinatorial Optimization,

13th European Conference, EvoCOP 2013 Vienna, Austria. Berlin - Springer, 2013. pp. 238-249.

KVASNIČKA, V. - CLEMENTIS, L. - POSPÍCHAL, J.: An Extension of Hill-climbing with Learning Applied to a Symbolic Regression of Boolean Functions. In: *GECCO 2013*. Proceedings of the Genetic and Evolutionary Computation Conference Companion, Amsterdam, Netherlands. New York - ACM, 2013. pp. 1129-1134.

PÁLFY, J. - POSPÍCHAL, J.: Algorithms for Dysfluency Detection in Symbolic Sequences Using Suffix Arrays. In: *Lecture Notes in Artificial Intelligence*. Vol. 8082, Rext, Speech, and Dialogue, 16th International Conference, TSD 2013. Pilsen, Czech Republic, 2013. pp. 76-83.

PÁLFY, J. - DARJAA, S. - POSPÍCHAL, J.: Dysfluent Speech Detection by Image Forensics Techniques. In: *2013 IEEE Workshop on Automatic Speech Recognition and Understanding (ASRU)*, Olomouc, Czech Republic, 2013. pp. 96-101.

SZABÓ, R. - HUDEC, L.: Identification of Vulnerability Part s of Web Applications Based on Anomaly Detection in http. In: *CompSysTech '13*, Proceedings of the 14th International Conference on Computer Systems and Technologies, Ruse, Bulgaria, 2013. ACM New York, USA. pp. 209-215

VILHAN, P. - HUDEC, L.: Building Public Key Infrastructure for MANET with Help of B.A.T.M.A.N. Advanced. In: *EMS 2013*, UKSim-AMSS Seventh European modelling symposium on computer modelling and simulation. Manchester, United Kingdom. Los Alamitos : IEEE Computer Society, 2013. pp. 530-535.

Selected Local and National Conferences

CLEMENTIS, L.: Analysis of Effect of Short-term and Long-term Motivation Using Fuzzy Approach. In: *Cognition and Artificial Life*. Silesian University in Opava, Czech Rebublic 2013. pp. 87-92. (in Slovak)

GRZNÁR, F. - KAPEC, P.: Visualizing Dynamics of Object Oriented Programs with Time Context. In: *Spring Conference on Computer Graphics SCCG 2013 in cooperation with ACM and Eurographics*. Smolenice Castle, Slovakia. Bratislava - Comenius University, 2013. pp. 75-82.

CHALUPA, D.: On Communities in Social Networks. In: *Cognition and Artificial Life*. Silesian University in Opava, Czech Rebublic 2013. pp. 59-64. (in Slovak)

MINDEK, P. - KAPEC, P.: Graph Visualization Using the Metaphor of Biological Neural Nets. In: *SCCG' 11*. Proceedings of the 27th Spring Conference on Computer Graphics. New York - ACM, 2013. pp. 141-148. (on-line)

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, Wienna University of Technology, Austria
- Institute Superieur 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 Deutchland, 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

- *J. Breier:* The 2013 Asian Conference onAvailability, Reliability amd Security Asia, ARES 2013, Yogyakarta, Indonesia, March 25-29, 2013
- *D. Chalupa:* EvoStar 2013, Vienna, Austria, April 3-4, 2013
- *J. Pospíchal:* Brno University of Technology, Czech Republic, May 15, 2013
- *L. Clementis:* NOSTRADAMUS 2013, International Conference on Prediction, Modeling and Analysis of Complex Systems, Ostrava, Czech Republic, June 3-5, 2013
- *R. Szabó:* International Conference on Computer Systems and Technologies Compsystech´13, Ruse, Bulgaria, June 27-30, 2013
- *D. Chalupa, L. Clementis:* GECCO: 2013 Genetic and Evolutionary Computation Conference, Amsterdam, The Netherlands, July 5-10, 2013
- *L. Clementis:* ECBS-EERC 2013, 3rd Eastern European Regional Conference of Computer Based Systems, Budapest, Hungary, August 28-30, 2013
- *J. Breier:* Congress ARES 2013, Regensburg, Germany, September 1-7, 2013
- *J. Pálfy:* TSD 2013, 16th International Conference on Text, Speech and Dialogue, Pilsen, Czech Republic, September 1-5, 2013

−   *P. Vilhan:* IEEE EMS 2013, 7th European Modelling Symposium on Mathematical Modelling and Computer Simulation, Manchester, UK, November 19-21, 2013

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)
−   EEE, 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)

Peter Trebatický
−   IEEE, Institute of Electrical and Electronic Engineers (member, since 2007)
−   IEEE Computer Intelligence Society (member, since 2008)

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 Engineerinng – 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´13, International Conference on Computer Systems and Technologies, June 28-29, 2013, Ruse, Bulgaria – L. Hudec: member of programme committee
- Computing and Informatics (CAI) – V. Kvasnička, J. Pospíchal: members of editorial board
- Inter. Conf. on Soft Computing Models in Industrial and Environmental Applications, Salamanca, September 2013 – J. Pospíchal: member of programme committee
- ICIT 2013 - The 6th International Conference on Information Technology, IEEE, Al-Zaytoonah University of Jordan, May 8-10, 2013 – J. Pospíchal: member of programme committee
- Nostradamus conference, VSB Technical University of Ostrava, Czech Republic, June, 2013 – J. Pospíchal: member of programme committee
- Symposium on Emergent Trends in Artificial Intelligence & Robotics, September 15-17, 2013 Kosice, Slovakia – V. Kvasnička, J. Pospíchal: member of programme committee
- MENDEL ´13, 19th International Conference on Soft Computing, June 26-28, 2013, Brno, Czech Republic – J. Pospíchal: member of programme committee
- IEEE 11th International Symposium on Applied Machine Intelligence and Informatics, SAMI 2013, January 31 - February 2, 2013, Herl'any, Slovakia – V. Kvasnička: member of programme committee
- INFORMATICS 2013 – International Scientific Conference on Informatics, November 5 - 7, 2013, Spišská Nová Ves, Slovakia – L.Hudec: member of programme committee
- Researchers' Night – September 27, 2013, Bratislava, Slovakia – V. Benešová: presentations of research
- Organisation of the World Usability Day 2013 at the FIIT STU, see http://www.fiit.stuba.sk/generate_page.php?page_id=4064
- Organisation of regular scientific seminars on Artificial Intelligence (at FIIT STU)
- Organisation of regular scientific seminar on Vision and Computer Graphics (at FIIT STU)

8 Institute of Computer Systems and Networks

E-mail: upss@fiit.stuba.sk
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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. (since June 2013)

Administrative Department
Alena Grúberová

Teaching Staff
Pavel Čičák, Assoc. Professor
Boris Dado
Barbara Drnajová (since August 2013)
Jana Flochová, PhD.
Elena Gramatová, Assoc. Professor
Pavol Horváth, Professor (part time)
Ján Hudec
Katarína Jelemenská, PhD.
Margaréta Kotočová, Assoc. Professor
Ivan Kotuliak, Assoc. Professor
Tomáš Kováčik, PhD.
Tibor Krajčovič, Assoc. Professor
Peter Magula, PhD. (part time)
Mária Pohronská, PhD. (part time, till June 2013)
Elena Tomalová (part time)
Peter Trúchly, PhD.

Researchers
Dušan Bernát

External Lecturers
Peter Palúch, PhD.
Matúš Turcsány, PhD.

Full time PhD Students
Jaroslav Abaffy
Ján Balažia
Andrej Binder
Roman Broniš
Maroš Ďuríček
Tomáš Halagan
Pavol Helebrandt
Martin Hrubý (till November 2013)
Peter Jombík
Matej Jurikovič
Štefan Krištofík
František Kudlačák
Dominik Macko

Ján Murányi
Martin Nagy
Michal Olšovský (till November 2013)
Peter Pištek
Miroslav Siebert
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
Peripheral Devices	Autumn	6	P. Horváth
Principles of Communication Systems	Autumn	6	P. Trúchly
Switching and routing in IP networks	Autumn	6	P. Palúch
WAN Technologies	Spring	6	P. Palúch

Master Study (Ing.)

Course	Semester	Credits	Lecturer
Architecture of Computer Systems	Autumn	6	D. Bernát
Communication Services and Networks	Autumn	6	M. Kotočová
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
Network Security	Autumn	6	P. Magula
NGN Networks, Services and Protocols	Spring	6	I. Kotuliak
Satellite Systems	Spring	6	P. Trúchly

Course	Semester	Credits	Lecturer
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 2013

Study Programme Computer and Communication Systems and Networks

- Adámik, Martin: *Schematic Synchronization Code Generator*.
  Supervisor: D. Bernát

- Baláž, Jozef: *Multimedial Application for Hybrid IP and DVB-T Architectures*.
  Supervisor: J. Murányi

- Balga, Peter: *A Software System for Supporting Education in Subjects LO and PPI*.
  Supervisor: Š. Krištofík

- Boros, Tomáš: *Content Delivery Network Design and Implementation*.
  Supervisor: A. Binder

- Burda, Kamil: *Visualization of Communication in Computer and Communication Networks*. Supervisor: P. Magula

- Danielovič, Lukáš: *Processor – Learning Tool*. Supervisor: E. Tomalová

- Dukát, Marek: *EPROM Emulator*. Supervisor: T. Krajčovič

- Filip, Filip: *Performance of Transport Layer Protocols*. Supervisor: M. Olšovský

- Grežo, Rudolf: *Routing Protocols and their Security*. Supervisor: M. Hrubý

- Hasin, Marek: *Multimedia Application for Hybrid IP and DVB-T Architectures*.
  Supervisor: J. Murányi

- Jurkovič, Peter: *Visualization of Hazards in Combinational Part of Asynchronous Circuits*. Supervisor: E. Tomalová

- Karabín, Andrej: *VHDL Code Compare Algorithm*. Supervisor: E. Tomalová

- Kohútka, Lukáš: *Reduction of Binary Decision Diagrams*. Supervisor: P. Pištek

- Koren, Jan: *Implementation of Chosen, Reliability Improvements, Methods*.
  Supervisor: J. Abaffy

- Križan, Matúš: *Design and Development of a Mobile Application*.
  Supervisor: J. Balážia

- Lenčéš, Lukáš: *Comparing Graphs*. Supervisor: B. Dado

- Lúčanský, Ján: *Reduction of Binary Decision Diagrams*. Supervisor: P. Pištek

- Mikuš, Martin: *Algorithm for Comparing VHDL Codes*. Supervisor: E. Tomalová

- Močkoř, Adam: *Edge Element of VoIP Network*. Supervisor: J. Murányi

- Nagy, Gabriel: *Application for Manipulation with Digital I/O Signals*.
  Supervisor: B. Dado

– Onder, Ján: *Measuring Traffic in IP Networks*. Supervisor: T. Kováčik

– Ondruš, Vladimír: *Design of Logic Combinational Circuits with Multiplexers*. Supervisor: P. Pištek

– Pivarník, Martin: *Proof of Concept IPv6 Testbed Setup SIP Interworking*. Supervisor: S. Schumann

– Polák, Martin: *Usage of GPS on Funtoro Devices*. Supervisor: P. Pištek

– Pôbiš, Anton: *Multimedia Application Using VoIP Architecture*. Supervisor: I. Kotuliak

– Rybár, Matej: *Retrospective Analysis of the State Graphs of Petri Nets*. Supervisor: M. Siebert

– Tkáč, Timotej: *Analysis of Covert Communication via DNS Server*. Supervisor: D. Bernát

– Trávniček, Tomáš: *Visualization of Security in Computer and Communication Networks*. Supervisor: P. Magula

– Urbán, Dávid: *TCP Protocols in MANET Network*. Supervisor: P. Trúchly

– Vangel, Máté: *Transport Protocol for Satellite Systems*. Supervisor: P. Trúchly

– Zemaník, Lukáš: *Working with GPS on Funtoro Devices*. Supervisor: P. Pištek

Study Programme Informatics

– Sabol, Róbert: *The Connection between TV Broadcast and Social Networks*. Supervisor: I. Kotuliak

Master (Ing.) Theses – Graduates 2013

Study Programme Computer and Communication Systems and Networks

– Bartek, Tomáš: *Architecture of QoS in IP MPLS Networks and Methods of QoS Measurement*. Supervisor: I. Gašparik

– Blesák, Viktor: *Testing Service Quality in Communication Networks*. Supervisor: M. Kotočová

– Briš, Pavol: *Improving Security and its Verification in the Computer System*. Supervisor: J. Abaffy

– Fodora, Martin: *Network Traffic Generator*. Supervisor: M. Hrubý

– Forgács, Matej: *Modeling and Diagnostics Using Coloured Petri Nets*. Supervisor: J. Flochová

– Halagan, Tomáš: *Safety Modules for Measuring Means KaTaLyzer*. Supervisor: T. Kováčik

– Hreha, Martin: *Design and Optimization of Networks with Maximum Redundancy*. Supervisor: M. Olšovský

– Hyben, Martin: *An Analyzer of Transport Streams in DVB-S*. Supervisor: P. Trúchly

– Jančiga, Tomáš: *Centralized Management of Access Points Allowing Seamless Roaming in IEEE 802.11 Networks*. Supervisor: J. Balážia

– Jasovský, Peter: *Smart Devices Management System*. Supervisor: A. Binder

- Káčer, Lukáš: *Web Server for Embedded Systems*. Supervisor: T. Krajčovič
- Kardoš, Martin: *Transformation of Formal Behavioral Specification in HSSL into the VHDL Model*. Supervisor: K. Jelemenská
- Klobušický, Ivan: *Quality of Service in Mobile Ad-Hoc Networks*. Supervisor: P. Magula
- Kokolevský, Tomáš: *Extension of a Hybrid Broadcast Broadband TV Platform*. Supervisor: T. Kováčik
- Kováč, Štefan: *Application in HBB and DVB Systems*. Supervisor: P. Trúchly
- Kudlačák, František: *Synthesis of Asynchronous Sequential Circuits*. Supervisor: E. Gramatová
- Kvasnička, Igor: *QoS Simulator in Communication Networks*. Supervisor: M. Olšovský
- Maron, Ľubomír: *Formal Verification of the Refinement Specification in HSSL Language*. Supervisor: D. Macko
- Martinický, Rastislav: *Improving Communication by Optimizing the Transport Layer*. Supervisor: M. Olšovský
- Matula, Tomáš: *Universal Embedded System for Intelligent Objects Management*. Supervisor: T. Krajčovič
- Perešíni, Ondrej: *Experimental Embedded System for Intelligent Actuators Control through the Internet*. Supervisor: T. Krajčovič
- Sidor, Samuel: *Simulation of Digital System Specification in HSSL*. Supervisor: K. Jelemenská
- Süll, Zsolt: *Security of IP PBX*. Supervisor: R. Moravec
- Ščepka, Daniel: *Access of Wireless Mobile Stations to IEEE 802.11 Networks with Centralized Management*. Supervisor: J. Balážia
- Šuhaj, Lukáš: *Intelligent Infrastructure Solution for Office*. Supervisor: P. Horváth
- Šutý, Karol: *Optimization of Multiplexer Trees*. Supervisor: P. Pištek
- Tamaškovič, Peter: *Routing Security in Mobile Ad Hoc Networks*. Supervisor: P. Magula

Doctoral (PhD.) Theses

Student name: Martin Hrubý
Degree program: Applied Informatics
Thesis title: *Optimization of Network Traffic Flow*
Supervisor: Margaréta Kotočová, Associate Professor
Defended on: November 25, 2013
Annotation: This project deals with traffic engineering in computer networks. We provide an overview of traffic engineering and current issues which we face in large heterogeneous networks. We analyze the area of QoS together with QoS objectives and most important principles. Well known and widely used approaches to providing QoS in heterogeneous networks are described. The project is focused on service provider backbone networks. We propose a model for gathering and statistical

modeling of network performance parameters based on multivariate normal distribution. The proposed model is implemented as part of a system for traffic flow optimization in backbone MPLS networks. Experimental topologies are proposed, in which experiments are carried out to verify the functionality of our implemented system, in a laboratory environment.

Student name:	Michal Olšovský
Degree program:	Applied Informatics
Thesis title:	*Advanced Notification System for TCP Performance Increase*
Supervisor:	Margaréta Kotočová, Associate Professor
Defended on:	November 25, 2013
Annotation:	This paper provides an overview of the current performance of the information transmission from the transport layer's point of view by means of using the dominant transport protocol TCP. The attention is paid to TCP's variants used in wired and wireless networks. First part of this work includes characteristics of the key elements affecting the TCP performance. For further design work factors and assumptions which were used while creating the original TCP were clarified. Conclusion of the overview is done not only from the point of performance and development but from the point of used mechanisms and techniques as well. Practical part of this document introduces our new advanced notification system ACNS. Design part of this document is dedicated to the description of the four key features of the new ACNS system as well as to ACNS integration into IPv4 and TCP. Implementation part describes the principles using pseudo codes. End of the document belongs to the functional and performance ACNS testing. These tests prove the correct ACNS behavior as well as the TCP performance improvement when used in combination with ACNS.

8.4 IIT.SRC Students' Papers

Full papers

– Bernát, Dušan: *Thread Synchronisation Using Self Modifying Code*.
  Supervisor: P. Čičák

– Halagan, Tomáš: *Security Modules for Measuring Tool KaTaLyzer*.
  Supervisor: T. Kováčik

– Hreha, Martin: *Advanced GLBP Load-balancing (GLBP+)*.
  Supervisor: M. Olšovský

– Hrubý, Martin: *Traffic Engineering Based on Statistical Modeling*.
  Supervisor: M. Kotočová

– Hyben, Martin – Jančiga, Tomáš – Kardoš, Martin – Maron, Ľubomír – Süll, Zsolt: *Visualization of Digital Systems Models*. Supervisor: K. Jelemenská

– Krištofík, Štefan: *Efficient Repair Rate Estimation of Redundancy Analysis Algorithms for Embedded Memories*. Supervisor: E. Gramatová

- Kudlačák, František: *Atmospheric Modelling via Flying Platform.*
Supervisor: M. Pohronská

- Macko, Dominik: *Power-Intent Integration into the Digital System Specification Model.* Supervisor: K. Jelemenská

- Maruniak, Marián: *Binary Decision Diagram Optimization Method Based on Multiplexer Reduction Methods.* Supervisor: P. Pištek

- Nagy, Martin: *New Security Architecture for Mobile Data Networks.*
Supervisor: I. Kotuliak

- Olšovský, Michal: *Advanced Notification System for TCP Congestion Control.*
Supervisor: M. Kotočová

- Tkáč, Timotej: *Analysis of Covert Communication via DNS.* Supervisor: D. Bernát

- Vojtko, Martin: *Modular Operating System.* Supervisor: T. Krajčovič

Extended Abstracts

- Čechvala, Martin – Hucková, Ivana – Obetko, Jakub – Roštecký, Richard – Šubín, Juraj – Šulák, Viktor: *User-Friendly Simulation of Wireless Networks in ns-3.*
Supervisor: P. Magula

- Jombík, Peter: *Reduce the Power Consumption by Selecting the Appropriate Processor.* Supervisor: T. Krajčovič

- Siebert, Miroslav: *PNets – the Verification Tool based on Petri Nets.*
Supervisor: J. Flochová

8.5 Research Laboratories

Networks Technology Laboratory I

Manager:	B. Dado
Contact:	boris.dado@stuba.sk
Description:	The research and teaching laboratory is used in practical lessons within several network courses, as well as for networking courses of Cisco Networking Academy, established at our faculty. The students are involved 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:	M. Kotočová
Contact:	margareta.kotocova@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 monolitic 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 Embeded, 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

Robust MPC for Hybrid Systems (RPHS) (VEGA 1/1105/11)

Project leader:	T. Krajčovič for UPSS
Members:	M. Ďuríček, P. Jombík, M. Vojtko
Supported by:	Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences
Duration:	January 2011 – December 2013
Description:	The last five years are marked by an increased interest in development of new control methods for heterogeneous hybrid process that include continuous and discrete dynamics. Research in control methods for hybrid non linear dynamic systems represent a new evolution trend in development and application of control algorithms that help considerably improve performance of complex technological processes within a wide spectrum of applications (power industry, car industry, health care, biotechnologies, transportation, service industry). Those advanced methods apply principles and methods of prediction, robustness, optimality and embeddedness. The main objective of the project is research and development, algorithmization and implementation of robust predictive control methods for non linear hybrid processes using modem information, communication and centrol technologies and systems realized by embedded computer systems.

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

Project leader:	T. Krajčovič for UPSS
Members UPSS:	I. Kotuliak

Supported by:	European Structural Fund
Duration:	January 2010 – January 2013
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.

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

Project leader:	E. Gramatová
Members:	K. Jelemenská, M. Ďuríček, J. Hudec, P. Jombík, Š. Krištofík, D. Macko, P. Pištek, M. Pohronská, 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 technoloqies 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.

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, 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 de-

livery through clouds and content distribution through the hybrid technologies

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. Pohronská
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.

Security and Management in Mobile Networks (2012et011)

Project leader:	M. Nagy
Members:	I. Kotuliak, J. Balažia, P. Helebrandt
Supported by:	Tatra banka Foundation
Duration:	February 2013 – November 2013
Description:	Mobile networks of GSM/GPRS/UMTS/LTE standards with over 5.5 billion connected devices are nowadays very popular topic and form the largest communications network in the world. Mobile devices like tablets and smart-phones are becoming a common part of our lives, yet we do not realize to what kinds of dangers we may be exposed through these devices. The project focuses on extending the experimental communication network present on Faculty of Informatics and Information Technologies, Slovak university of technology in Bratislava with OpenFlow based forwarder nodes and an access network based on GSM/GPRS/EDGE standard. This complex network will be used for research of mobile terminal security and new hot research

topic - SDN (Software Defined Networking). On this network, new approaches and methods that will address specific security issues of mobile networks (mainly lack of resources on the radio interface, vulnerability of mobile terminals, unavailability of host-based firewalls for mobile devices, etc.) will be designed, implemented and verified. Usability of SDN approach in mobile networks will be also examined with emphasis on the use of OpenFlow protocol.

Finance in the Pocket (2012et006)

Project leader:	T. Kováčik
Members:	R. Broniš, B. Baranec, P. Bôžik
Supported by:	Tatra banka Foundation
Duration:	February 2013 – November 2013
Description:	The goal of the project is to enable a user or a group of users to reflect their economic behaviour for the purpose of its optimization. The output of the project is a mobile-television platform for processing of the data of the financial transactions of the users and for displaying agregated information about them. The solution will contain a smartphone/tablet application, which, by using the capabilities of this device, will acquire and process the data about financial transaction from paper receipt. Afterwards, it will be able to show complete statistics about the flows of the money of a user or of a group of users. Consequently, they will be able to gain an overview on which types of commodities, services or activities they have spent their money on. The application will enable them to see their spending behaviour in time from above which therefore enable them an optimization of their budget for the present moment and their current priorities. What is more, our solution will be able to bring information about financial spending directly to the living room of the household to present them during the family budget discussion. This will be acomplished by interconnecting the mobile and the television platforms. During this period of the world-wide economic crisis proposed solution will help the user to differentiate between the less important expenses and actual priorities. Eventually this can lead to decrease of the economical and mental pressure put on the user or family.

Weekend Hackathon (2012vs035)

Project leader:	I. Kotuliak
Members:	M. Maxian, M. Bieliková, L. Bubanová, M. Haruštiak, Z. Lipovská
Supported by:	Tatra banka Foundation
Duration:	January 2013 – November 2013
Description:	Hackathon is an event, where students pitch their ideas, and the best ones get realized with the help of professionals. The goal of the event is to improve the creativity of the students, and their ability to develop innovative ideas in a team. The even has a form of a workshop. It starts on Friday with the presentation of ideas, and forming of teams. Teams start working on their collective vision immediately. Over the weekend, they get feedback from professionals, who will evaluate the innovativeness of the idea, its feasibility, the form of realization, and the presentation of the final version of the idea. The final evaluation of

the projects is on Sunday evening. Teams present their final realizations to a committee, composed of successful people from IT-oriented companies, and people from the university management.

8.7 Publications

Journals

OLŠOVSKÝ, M.: Multiparameter TCP Congestion Control. In: *Information Sciences and Technologies*. Bulletin of the ACM Slovakia. Vol. 5, No. 2 (2013), ISSN 1338-1237. pp. 39-43.

VARGIC, R. - KOTULIAK, I. - VRÁBEL, A. - HUSÁK, F.: Provisioning of VoIP Services for Mobile Subscribers Using WiFi Access Network. In: *Telecommunication Systems*. Vol. 52, No. 3 (2013), ISSN 1018-4864. pp. 1705-1711.

International Conferences

BINDER, A. - KOTULIAK, I.: Content Delivery Network Interconnect: Practical Experience. In: *ICETA 2013*. 11th IEEE International Conference on Emerging eLearning Technologies and Applications Proceedings, Starý Smokovec, The High Tatras, Slovakia. Piscataway - IEEE, 2013. pp. 29-33

HRUBÝ, M. - OLŠOVSKÝ, M. - KOTOČOVÁ, M.: A Novel Technique for TCP Based Congestion Control. In: *DCNET 2013, ICE-B 2013, OPTICS 2013*. Proceedings of the 4th International Conference on Data Communication Networking, 10th International Conference on e-Business and 4th International Conference on Optical Communication Systems, Reykjavík, Iceland. Reykjavík - SciTePress, 2013. p. 8.

HRUBÝ, M. - OLŠOVSKÝ, M. - KOTOČOVÁ, M.: Advances in TCP Congestion Prevention. In: *SAMI 2013*. IEEE 11th Int. Symposium on Applied Machine Intelligence and Informatics proceedings, 2013. Slovakia. Piscataway - IEEE, 2013. pp. 111-116.

HRUBÝ, M. - OLŠOVSKÝ, M. - KOTOČOVÁ, M.: Algorithm for Dynamic Traffic Rerouting and Congestion Prevention in IP Networks. In: *Lecture Notes in Electrical Engineering*. Vol. 152, Innovations and Advances in Computer, Information, Systems Sciences, and Engineering. New York - Springer, 2013. pp. 649-660.

HRUBÝ, M. - OLŠOVSKÝ, M. - KOTOČOVÁ, M.: Solving VoIP QoS and Scalability Issues in Backbone Networks. In: *IAENG Transactions on Engineering Technologies*. Special Volume of the World Congress on Engineering 2012. Springer Netherlands, 2013. pp. 537-549.

HRUBÝ, M. - OLŠOVSKÝ, M. - KOTOČOVÁ, M.: Traffic Flow Optimization and Visualization in MPLS Networks. In: *WCE 2013*. World Congress on Engineering, Imperial College London, London, U.K. Vol. II. Hong-Kong - International Association of Engineers, 2013. pp. 849-854.

JELEMENSKÁ, K. - HYBEN, M. - JANČIGA, T. - KARDOŠ, M. - MARON, Ľ. - SÜLL, ZS.: Extensible Framework for Graphical Representation of HDL Models and Simulation Results. In: *Africon 2013*. Sustainable Engineering for a Better Future, IEEE Africon 2013 Conference, Piscataway - IEEE, 2013. pp. 860-864.

JELEMENSKÁ, K. - ČIČÁK, P.: SystemC Modeling Skills Assessment in Moodle Environment.. In: *INES 2013*. IEEE 17th International Conference on Intelligent Engineering Systems, Costa Rica. Piscataway - IEEE, 2013. pp. 351-356.

Jᴇʟᴇᴍᴇɴsᴋá, K.: Making Digital Systems Design More Convenient to Students by Means of Visualization. In: *ICETA 2013*. 11th IEEE International Conference on Emerging eLearning Technologies and Applications Proceedings, Starý Smokovec, The High Tatras, Slovakia. Piscataway - IEEE, 2013. pp. 183-188.

Kᴏᴠáčɪᴋ, T. - Bʀᴏɴɪš, R. - Kᴏᴛᴜʟɪᴀᴋ, I. - Mᴀʀᴛɪɴɪᴄᴋý, R. - Hʀᴇʜᴀ, M.: Wireless Sensor Networks for Next Generation Networks and HBB-Next Architecture. In: *ICETA 2013*. 11th IEEE Int. Conf. on Emerging eLearning Technologies and Applications Proceedings, Starý Smokovec, Slovakia. Piscataway - IEEE, 2013. pp. 229-233.

Kʀɪšᴛᴏғíᴋ, Š.: Efficient Repair Rate Estimation of Redundancy Algorithms for Embedded Memories. In: *WCE 2013*. World Congress on Engineering, Imperial College London, London, U.K. Vol. II. Hong-Kong - International Association of Engineers, 2013. pp. 920-925.

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ĎURÍČEK, M.: Challenges of Cooperative Control-Flow Checking. In: *Computer Architecture and Diagnostics.* Workshop for PhD Students, Hotel Klášter Teplá, Czech Republic, University of West Bohemia in Pilsen, 2013. pp. 27-32.

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Parts of Books

ABAFFY, J. - KRAJČOVIČ, T.: Multiple Software Watchdog Timers in the Linux OS. In: *Lecture Notes in Electrical Engineering.* Vol. 151, Emerging Trends in Computing, Informatics, Systems Sciences, and Engineering. New York - Springer Science-Business Media, 2013. pp. 759-765.

HUDEC, J.: Some Results in Automatic Functional Test Design for Processors. In: *Lecture Notes in Electrical Engineering.* Vol. 151, Emerging Trends in Computing, Informatics, Systems Sciences, and Engineering. New York - Springer Science-Business Media, 2013, pp. 965-972.

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POHRONSKÁ, M. - KRAJČOVIČ, T.: Implementation of the Handheld Decision Support System for Agriculture and Home Gardening. In: *Lecture Notes in Electrical Engineering.* Vol. 151, Emerging Trends in Computing, Informatics, Systems Sciences, and Engineering. New York - Springer Science-Business Media, 2013, pp. 637-645.

ŠTRBA, A. - KRAJČOVIČ, T.: Operating System for Wireless Embedded Systems Powered by Energy Harevsters. In: *Lecture Notes in Electrical Engineering.* Vol. 151, Emerging Trends in Computing, Informatics, Systems Sciences, and Engineering. New York - Springer Science-Business Media, 2013, pp. 331-344.

Textbooks

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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 Superieur 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, Nederlands

- 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, Nederlands

- Katholieke Universiteit Leuven, Belgium

- Technische Hochschule Mittelhessen, Germany

- TARA Systems Systementwicklung GmbH, Germany

Visits of Staff Members

- *E. Gramatová:* COST IC1103 project meeting, Berlin, Germany, January 19-21, 2013

- *E. Gramatová:* COST LD12036 project meeting, Brno University of Technology, Czech Republic, January 14, 2013

- *E. Gramatová:* Program Committee meeting of the 16th IEEE Symposium on Design and Diagnostics of Electronic Circuits and Systems, DDECS 2013, Prague, Czech Republic, February 18-19, 2013

- *T. Kováčik:* HBB Next Integration Meeting, Friedberg, Germany, March 6-7, 2013

- *E. Gramatová:* IT4Innovations project meeting, Technical University of Ostrava, Czech Republic, March 21, 2013

- *K. Jelemenská, E. Gramatová, Š. Krištofík, D. Macko*: 16th IEEE Symposium on Design and Diagnostics of Electronic Circuits and Systems, DDECS 2013, Karlovy Vary, Czech Republic, April 7-10, 2013

- *I. Kotuliak:* Université de Versailles, St-Quentin-En-Yvelines, France, April 9-10, 2013

- *P. Čičák*: Brno University of Technology, Czech Republic, April 17, 2013

- *M. Hrubý, Š. Krištofík, M. Olšovský, M. Siebert:* World Congress of Engineering 2013, London, UK, May 2-5, 2013
- *B. Dado, M. Hrubý, M. Olšovský:* NETACAD 2013, Brno, Czech Republic, April 19, 2013
- *P. Trúchly:* LdV project IMProVET, final meeting, Maribor, Slovenija, May 15-18, 2013
- *P. Čičák:* FELAPO 2013, Pardubice, Czech Republic, May 21-23, 2013
- *E. Gramatová:* Brno University of Technology, Czech Republic, May 15, 2013
- *D. Macko*: Median Workshop, Avignon, France, May 29-31, 2013
- *Š. Krištofík*: Brno University of Technology, Czech Republic, June 7, 2013
- *P. Čičák:* IEEE 17th International Conference on Intelligent Engineering Systems INES 2013, San Jose, Costa Rica, June 18-22, 2013
- *R. Broniš*: HBB Next – Integration Workshop, Munich, Germany, June 24-26, 2013
- *M. Olšovský:* WCE 2013, World Congress of Engineering, London, UK, July 2-7, 2013
- *M. Maruniak:* ICSSE 2013, IEEE Internatinal Conference on System Science and Engineering, Budapest, July 4-7, 2013
- *K. Jelemenská*: Czech Technical University in Prague, Czech Republic, July 7, 2013
- *M. Hrubý, M. Olšovský:* DC NET 2013, INSTICC International Conference on Data Communication Networking + ICETE 2013, The 10th International Joint Conference on e-Business and Telecommunications, Reykjavik, Island, July 23-31, 2013
- *K. Jelemenská:* Erasmus mobility, Institute Catholique de Paris, France, September 1-4, 2013
- *M. Siebert:* DSD 2013, 16th Euromicro Conference on Digital System Design, Santander, Spain, September 3-7, 2013
- *K. Jelemenská:* IEEE Africon 2013 Conference, Port Louis, Mauritius, September 8-16, 2013
- *T. Krajčovič, M. Vojtko:* AE 2013, 18th International Conference on Applied Electronics, Pilsen, Czech Republic, September 9-12, 2013
- *E. Gramatová, M. Ďuríček, D. Macko*: PAD 2013, Pilsen, Czech Republic, September 9-11, 2013
- *M. Ďuríček, D. Macko, Š. Krištofík:* 1st MEDIAN Training School, Rome, Italy, September 15-19, 2013
- *E. Gramatová:* Management Committee of the COST Action IC 1103 MEDIAN meeting, Rome, Italy, September 19, 2013
- *J. Murányi*: NGMAST´13, 7th International Conference on Next Generation Mobile Apps, Services and Technologies, Prague, Czech Republic, September 24-28, 2013
- *A. Binder:* 5th ngnlab International Workshop, Prague, Czech Republic, September 25-27, 2013

- *P. Čičák, I. Kotuliak:* GRIFO 2013, University of West Bohemia, Pilsen, October 14-16, 2013
- *E. Gramatová, K. Jelemenská, M. Ďuríček, M. Siebert:* Vienna University of Technology, Austria, November 21, 2013
- *A. Binder, J. Skalný:* Cisco, London, UK, November 21-23, 2013
- *E. Gramatová:* Brno University of Technology, Czech Republic, November 29, 2013

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
    Sci-ences and Technologies – E. Gramatová, member

–   Scientific Board of IT4 Innovation project – E. Gramatová, member

–   DDECS 2013 – 16th IEEE Symposium on Design and Diagnostics of Electronic
    Circuits and Systems, April 2013, Karlovy Vary, Czech Republic – E. Gramatová:
    member of programme and steering committees, K. Jelemenská: member
    of programme committee

–   ECBS-EERC 2013 – 3rd Eastern European Regional Conference on the Engineering
    of Computer Based Systems, August 2013, Budapest, Hungary – T. Krajčovič:
    member of programme committee

–   ETS 2013 – 18th IEEE European Test Symposium, May 2013, Anecy, France –
    E. Gramatová: member of programme committee

–   EWDTS 2013 – 11th East-West Design & Test Symposium, September 2013,
    Rostov-on-Don, Russia – E. Gramatová: member of programme committee

–   HPCC 2013 – 15th International Conference on High Performance and Communica-
    tions – I. Kotuliak: member of programme committee

–   ICETA 2013 – 11th International Conference on Emerging E-Learning Technolo-
    gies and Applications, October, 2013, Starý Smokovec, Slovak Republic –
    P. Čičák, E. Gramatová, K. Jelemenská: members of programme committee

–   IIT.SRC 2013 – Informatics and Information Technologies Student Research Con-
    ference – P. Čičák, J. Flochová, E. Gramatová, P. Horváth, K. Jelemenská, M. Ko-
    točová, I. Kotuliak, T. Krajčovič: members of programme committee

–   LMPCNA 2013 – The Fifth International Workshop on Learning Methodologies
    and Platforms used in the Cisco Networking Academy, March 2013, Lisbon, Portu-
    gal – P. Čičák: member of programme committee

–   PAD 2013 – Czech and Slovak Seminar on Computer Architectures and Diagnos-
    tics, September 9-11, 2013, Teplá, Czech Republic – E. Gramatová: member
    of steering committee, E. Gramatová, K. Jelemenská: members of programme
    committee

–   VERFE'13 – 9th Workshop on Dependability and Fault Tolerance, February 2013,
    Prag, Czech Republic – E. Gramatová: member of programme committee

9   Institute of Informatics and Software Engineering

E-mail: uisi@fiit.stuba.sk
Web: http://www.uisi.fiit.stuba.sk/
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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
> Alexandra Zakálová

Teaching Staff
> Nadežda Andrejčíková, PhD. (part time)
> Michal Barla, PhD.
> 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
> Alena Kovárová, PhD.
> Gabriela Kosková, PhD.
> Rastislav Královič, Assoc. Professor (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
Ľubomír Majtás, PhD. (part time)
Pavol Mederly, PhD. (part time)
Vladimír Mlynarovič, Assoc. Professor (part time)
Ľudovít Molnár, Professor
Pavol Návrat, Professor
Jozef Papula, Professor (part time)
Ivan Polášek, PhD.
Anna Považanová (part time)
Viera Rozinajová, Assoc. Professor
Petr Šaloun, Assoc. Professor (part time)
Ľubor Šešera, PhD. (part time)
Jakub Šimko, PhD. (since September)
Marián Šimko, PhD.
Marián Šuráb, Assoc. Professor (part time)
Jozef Tvarožek, PhD.
Valentino Vranić, Assoc. Professor
Michal Winczer, PhD. (part time)

External Lecturers

Danica Šoltésová, PhD.

Full-Time PhD Students

Zoltán Harsányi
Michal Holub
Peter Kajsa (till March)
Michal Kasan
Michal Kompan
Tomáš Kramár
Peter Krátky (since September)
Peter Kubán (since September)
Tomáš Kučečka
Eduard Kuric
Tomáš Kuzár (till March)
Martin Labaj
Róbert Móro
Aurel Paulovič
Karol Rástočný
Štefan Sabo
Ivan Srba
Márius Šajgalík
Roman Šelmeci
Jakub Šimko (till July)

Petra Vrablecová (since September)
Dušan Zeleník
Anushervon Ziyoev (since September)

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. Šoltésová
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. Vranić
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. Vranić
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	Ľ. 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. Šoltésová
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 2013

Study Programme Informatics

−   Bádal, Matej: *Plugin to Thunderbird Email Client for Annotating Emails*.
    Supervisor: M. Laclavík

−   Bednárik, Filip: *Application of Technologies of Web 3.0 in Commercial Sphere*.
    Supervisor: M. Líška

- Benkovič, Samuel: *Planning a Simulated Robotic Football Player.* Supervisor: I. Kapustík

- Blanárik, Michal: *Named Entities Extraction from Text and Merge of Inflected Forms Named Entities.* Supervisor: M. Laclavík

- Bošiak, Vladimír: *Application Technologies of Web 3.0 in Commercial.* Supervisor: M. Líška

- Cáder, Lukáš: *Combined Use of Mobile Phone Sensors.* Supervisor: V. Vranić

- Čársky, Matej: *Reporting Over Application for Distributed Recommendation.* Supervisor: T. Kuzár

- Červeňová, Dominika: *Context-Aware Recommendation of Web Information.* Supervisor: D. Zeleník

- Daráž, Jakub: *User Identification in the Eclipse Environment.* Supervisor: D. Chudá

- Demčák, Peter: *Innovative Application within an International Competition.* Supervisor: M. Barla

- Galbavý, Ondrej: *Innovative Application within an International Competition.* Supervisor: M. Barla

- Gregorovič, Lukáš: *The Goalkeeper for 3D Simulated Robotic Football.* Supervisor: I. Kapustík

- Grznár, Marek: *Adaptive Feedback in Web Systems.* Supervisor: M. Labaj

- Hamar, Peter: *Managing Citations.* Supervisor: N. Andrejčíková

- Harinek, Jozef: *Extracting Keywords from Educational Content.* Supervisor: M. Šimko

- Hirjak, Tibor: *Mobile Device as a Music Generator.* Supervisor: A. Kovárová

- Chlebana, Matej: *Software Utility for Making Interactive Exams.* Supervisor: M. Lucká

- Janík, Martin: *Combined Use of Sensors in Mobile Devices.* Supervisor: V. Vranić

- Jánošík, Tomáš: *Extracting Interesting Information from Social Media.* Supervisor: P. Návrat

- Kalmár, Ján: *Textual Entailment in Natural Language Processing.* Supervisor: J. Tvarožek

- Kepič, Tomáš: *Time Series Analysis.* Supervisor: G. Kosková

- Kĺč, Daniel: *Implementation of Sophisticated Algorithms for Nuclear Spectra Analysis.* Supervisor: V. Matoušek

- Kompas, Šimon: *Characteristics of Small World Networks.* Supervisor: G. Kosková

- Kostrab, Rastislav: *Used M-Education.* Supervisor: J. Lang

- Kubica, Stanislav: *Modular System for Web Search.* Supervisor: Š. Sabo

- Kuruc, Marián: *Crowd Simulation.* Supervisor: P. Lacko

- Lenčéš, Marek: *Using Design Patterns in Software Systems Development.* Supervisor: P. Kajsa

- Londák, Martin: *Creating Natural Language Database Queries*.
  Supervisor: P. Lacko

- Marcoňák, Matej: *Querying Large Web Repositories*. Supervisor: K. Rástočný

- Markech, Martin: *Semantic Wiki*. Supervisor: J. Šimko

- Martinkovič, Tomáš: *The Impact of Text Chunking on Text Document Similarity*.
  Supervisor: T. Kučečka

- Martoš, Ivan: *Computerized Adaptive System for Testing Knowledge
  of Mathematics*. Supervisor: M. Lucká

- Mercz, Jakub: *Generation of Database Queries in Natural Language*.
  Supervisor: P. Lacko

- Mészáros, Michal: *Optimization Inner Data Structures of Graph Database SGDB*.
  Supervisor: M. Ciglan

- Mišíková, Kristína: *Context Based Searching of Information Using Thesaurus*.
  Supervisor: V. Rozinajová

- Molnár, Samuel: *Navigation by a Cloud of Important Terms*.
  Supervisor: M. Bieliková

- Moravčík, Roman: *The Goalkeeper for Simulated Robotic Football*.
  Supervisor: I. Kapustík

- Nemeček, Tomáš: *Tool for Identifying Root Base of Slovak Word*.
  Supervisor: D. Chudá

- Noga, Matej: *Recommendation Based on Difficulty Ratings*. Supervisor: M. Labaj

- Páleník, Peter: *Road Network as a Complex Graph*. Supervisor: A. Bou Ezzeddine

- Petluš, Martin: *Machine Learning of the Ranking Function for Search Engine*.
  Supervisor: T. Kramár

- Puterová, Janka: *The Impact of Biometric Characteristics to Model for User*.
  Supervisor: D. Chudá

- Samuhel, Patrik: *The Impact of Text Chunking on Text Document Similarity*.
  Supervisor: T. Kučečka

- Sekerák, Lukáš: *Interactive Visualization of Information Network*.
  Supervisor: M. Laclavík

- Skrisa, Július: *Electronic Payments and its Security*. Supervisor: I. Polášek

- Šimek, Miroslav: *Innovative Application within an International Competition*.
  Supervisor: M. Barla

- Štajer, Andrej: *Development of Software Systems with Use of Design Patterns*.
  Supervisor: P. Kajsa

- Štetiar, Matej*: RFID in the Library*. Supervisor: N. Andrejčíková

- Štrbáková, Veronika: *Innovative Application within an International Competition*.
  Supervisor: M. Barla

- Šuta, Erik: *Performance Monitoring of Java Applications*. Supervisor: P. Mederly

- Toma, Martin: *Modern Tools Utilization for an Information System Development Based on Service Oriented Architecture*. Supervisor: V. Rozinajová

- Valko, Andrej: *Digital Chronicle*. Supervisor: N. Andrejčíková

- Vincúr, Juraj: *Search in Source Code Including Temporal Dynamics*. Supervisor: E. Kuric

- Zápach, Radoslav: *Creating a Parallel Corpus from the Web, with Use in Statistical Machine Translation.* Supervisor: M. Laclavík

- Zbell, Pavol: *Source Code Search within Context*. Supervisor: M. Bieliková

Master Theses – graduates 2013

Study Programme Information Systems

- Bilevic, Roman: *Changes of User Interests in Time and its Use in Search Engines*. Supervisor: T. Kramár

- Bimbo, Miroslav: *User Modeling Based on Microblog Data*. Supervisor: M. Šimko

- Briš, Marek: *The Analysis of the User′s Behaviour in Web Systems*. Supervisor: P. Šaloun

- Čorej, Tomáš: *Relational Database Systems Built on Top of Mapreduce Framework*. Supervisor: P. Lacko

- Ďurčák, Lukáš: *Agent Decision-Making Logic in Simulated Soccer*. Supervisor: I. Kapustík

- Fornádeľ, Michal: *Estimation of Legacy Application Upgrade Time in a Cloud Environment*. Supervisor: A. Danko

- Immer, Michal: *Categorization of Unstructured Information on the Web*. Supervisor: T. Kuzár

- Jurčík, Peter: *Effective Work with Xpath in the Context of Integration of Information Systems*. Supervisor: P. Mederly

- Macko, Peter: *Unified Search of Linked Data on the Web*. Supervisor: M. Holub

- Mäsiar, Juraj: *Modular Network Analyzer*. Supervisor: M. Nehéz

- Mihalik, Adam: *Verifying the Existence of Citations in Similar Documents*. Supervisor: D. Chudá

- Pavlech, Lukáš: *Agent-Based Modeling and Simulation of Crowd Evacuation during Building Fire.* Supervisor: I. Budinská

- Polgár, Miroslav: *Interactive Adaptive English Vocabulary Learning Assistance on a Mobile Device*. Supervisor: A. Kovárová

- Sokol, Pavol*: Similarity in Short Text Snippets and Possibilities of its Application*. Supervisor: M. Barla

- Šilhár, Dárius: *A Method for Musical Melody Based Search*. Supervisor: N. Hrušková

- Žilinčík, Michal: *Social Networks Exploratory Search Focused on Dynamical Criteria and Relationships of Metadata to Content*. Supervisor: P. Návrat

Study Programme Software Engineering

- Belanji, Juraj: *Diagramatic and Nondiagramatic Representation of Feature Models.* Supervisor: V. Vranić

- Beňo, Marián: *Adapting Multi-Agent Systems and Swarm Intelligence in Knowledge Management.* Supervisor: I. Polášek

- Betina, Timotej: *Information Retrieval with Structural Segmentation of Documents.* Supervisor: I. Polášek

- Burger, Roman: *Personalized Reading Resources Organization.* Supervisor: M. Bieliková

- Fejes, Máté: *Recognizing User's Emotion in Information System.* Supervisor: J. Tvarožek

- Feješ, Adrián: *Use of Patterns for Modeling Service-Oriented Architecture.* Supervisor: R. Šelmeci

- Franta, Martin: *Processing Non-annotated Documents by Utilizing Semantics from Existing Metadata.* Supervisor: N. Andrejčíková

- Gelányi, Ľuboš: *Automation of Source Code Refactoring.* Supervisor: P. Kajsa

- Gomola, Alojz: *Interleaving of Feature Model with UML.* Supervisor: P. Kajsa

- Habdák, Martin: *Semantic Search in the Content of Cultural Institutions.* Supervisor: N. Andrejčíková

- Horváth, Róbert: *Augmenting the Web for Facilitating Learning.* Supervisor: M. Šimko

- Hudek, Ján: *Information Retrieval on Web.* Supervisor: A. Bou Ezzeddine

- Jaroszewicz, Kazimír: *Community Detection in Networks Using Node's Atributes.* Supervisor: M. Ciglan

- Krátky, Peter: *User Modeling Using Social and Game Principles.* Supervisor: J. Tvarožek

- Lačný, Jozef: *Personalized Recommendation of Learning Resources.* Supervisor: M. Kompan

- Lajčin, Tomáš: *Model-Driven Development of XSLT Transformations.* Supervisor: P. Mederly

- Lezo, Andrej: *Utilization of Semantic Relations for Information Searching in Culture Heritage Domain.* Supervisor: V. Rozinajová

- Macko, Peter: *Unified Search of Linked Data on the Web.* Supervisor: M. Holub

- Maršalek, Maroš: *Source Code Authorship Detection Using User Modelling.* Supervisor: D. Chudá

- Maruš, Matej: *Searching for the Meaning of the User's Communication.* Supervisor: I. Kapustík

- Masný, Ľuboš: *Web Exploratory Search.* Supervisor: P. Návrat

- Meliško, Peter: *Obtaining Information from Semantic Data Using Queries Consisting of Keywords.* Supervisor: M. Ciglan

- Michalko, Pavel: *Checking of Texts Similarity in the Web Resources*. Supervisor: D. Chudá

- Mitrík, Štefan: *Context-Aware Physical Activity Recommendation*. Supervisor: M. Bieliková

- Nagy, Balázs: *Metadata Collection for Effective Organization of Personal Multimedia Repositories Using Games with a Purpose*. Supervisor: J. Šimko

- Paššák, Peter: *Optimization of Robot Motion in Simulated 3D Robotic Soccer Using Evolutionary Algorithms*. Supervisor: I. Kapustík

- Pipík, Roman: *Support for Refactorization with New Approaches*. Supervisor: I. Polášek

- Sedláček, Andrej: *Leveraging In-Memory Data Management in Mission-Critical Business Scenarios*. Supervisor: A. Danko

- Sládeček, Peter: *Article Clustering with Use HTML Tags*. Supervisor: T. Kučečka

- Staraček, Ľuboš: *Development of Cross-Platform Applications for Mobile Devices*. Supervisor: V. Vranić

- Súkeník, Ján: *Source Code Analysis Using Abstract Syntax Trees*. Supervisor: P. Lacko

- Szórád, Anton: *Application of Patterns in Modeling Service-Oriented Architectures*. Supervisor: R. Šelmeci

- Šalmík, Jakub: *Personalized Recommendation with Considering of Social Aspects*. Supervisor: M. Kompan

- Ševcech, Jakub: *Web Navigation Based on Annotations*. Supervisor: M. Bieliková

- Tomlein, Michal: *Method for Social Programming and Code Review*. Supervisor: J. Tvarožek

- Vacula, Matúš*: Information Retrieval Using Short-Term Context*. Supervisor: D. Zeleník

- Vrablecová, Petra: *Relationship Discovery from Educational Content*. Supervisor: M. Šimko

Doctoral (PhD.) Theses

Student name: Tomáš Kuzár
Degree program: Software Systems
Thesis title: *Clustering on Social Web*
Supervisor: Pavol Návrat, Professor
Defended on: March 14, 2013
Annotation: This thesis is focused on content clustering on social web, which increases its potential rapidly. Growing number of involved users lead to significant increase in amount of user-generated content. In our research, we focus on processing of unstructured textual content on social web in order to access relevant information in way that is more effective. We have designed and evaluated methods for building precise content clusters by mining social web data. Our findings indicate the need to encounter external knowledge and the internal relation-

ships between objects on social web to increase the accuracy of extracted knowledge. In user study, we demonstrate how the accurate content clusters augment the access to relevant information on the social web.

Student name:	Peter Kajsa
Degree program:	Software Engineering
Thesis title:	*Models of Software Systems: Design Pattern Support*
Supervisor:	Pavol Návrat
Defended *on:*	March 14, 2013
Annotation:	The thesis is focused on the area of the design pattern support in the models of higher abstraction level and subsequent transformations to their platform specific forms and source code as well. The main core of the thesis is the method of the design pattern support which is based on a principle of suggestion of design pattern instances via the semantic marking of model elements or source code fragments and the subsequent transformations of this way marked models or source code. The transformations generate the missing structure of the suggested design pattern instances in the requested form. The method provides the support of design patterns at the three levels of abstraction and in this way it enables earlier application of the design patterns into models and it provides more abstract view on the instances. The emphasis is put also on the support of specialization, concretization and variability of design patterns. The method defines transformations between the supported model levels and the source code. Within the transformations the emphasis is put on the preserving of the visibility of pattern instances and on the preserving of the pattern support also at the lower abstraction levels till the source code. Moreover, the transformations are driven by models of patterns and they are designed in the way which provides great adaptability of the transformation results and easy extension of the support about new patterns or custom model structures. Thanks to the continual support of the design patterns at more levels of abstraction and thanks to the transformations between particular model levels and source code, the method tries to achieve the applicability in the area of the iterative, incremental and model driven development.

Student name:	Jakub Šimko
Degree program:	Software Engineering
Thesis title:	*Harnessing Manpower for Creating Semantics*
Supervisor:	Mária Bieliková, Professor
Defended on:	July 4, 2013
Annotation:	The crowdsourcing and games with a purpose (GWAPs) have emerged as an alternative to expert-based and automated semantics acquisition approaches. We analyze role of GWAPs as tools for resource metadata and domain models acquisition and discuss their design aspects. For acquisition of lightweight term relationship network, we present a negative search query formulation game. For acquisition of (personal) image tags, we devised a memory and annotation card

game, where players identify identical play cards. For validation of music metadata, we devised a multi-choice question-based game, where players identify tag sets that are characteristic to music tracks they hear. We also present general improvements to GWAP design: "helper artifact" validation scheme, a posteriori cheating detection heuristics and approaches to measurement and use of player competences.

9.4 IIT.SRC Students' Papers

Full papers

– Maršalek, Maroš: *Source Code Authorship Detection Using User Modeling.*
Supervisor: D. Chudá

– Súkeník, Ján: *Detection of Code Clones: Necessity or a Myth?* Supervisor: P. Lacko

– Tomlein, Michal: *Method for Social Programming and Code Review.*
Supervisor: J. Tvarožek

– Bálik, Jaroslav: *Symmetric Aspect-Oriented Programming in JavaScript.*
Supervisor: V. Vranić

– Šelmeci, Roman: S*tructural Modelling of SOA Design Patterns with Attributed Graphs.* Supervisor: V. Rozinajová

– Krátky, Peter: *What Makes the Best Computer Game? How Game Features Affect Game Play.* Supervisor: J. Tvarožek

– Lačný, Jozef: *Personalized Recommendation of Learning Resources.*
Supervisor: M. Kompan

– Mitrík, Štefan: *Discovering and Predicting Human Behaviour Patterns.*
Supervisor: M. Bieliková

– Sládeček, Peter: *Article Clustering with Usage of HTML Tags.*
Supervisor: T. Kučečka

– Kramár, Tomáš: *Multiple Sources of Search Context, their Influence and Applicability.* Supervisor: M. Bieliková

– Sabo, Štefan: *Social Insect Inspired Approach for Visualization and Tracking of Stories on the Web.* Supervisor: P. Návrat

– Srba, Ivan: *A Study on Influence of Students' Personal Characteristics on Collaborative Learning.* Supervisor: M. Bieliková

– Feješ, Adrián: *Use of Design Patterns in Modeling Service Oriented Architecture.*
Supervisor: R. Šelmeci

– Staráček, Ľuboš: *Using Aspect-Oriented Change Realization to Introduce and Document Changes in Object-Oriented Models.* Supervisor: V. Vranić

– Kuric, Eduard: *Activity-Based Programmer's Knowledge Model for Personalized Search in Source Code.* Supervisor: M. Bieliková

– Demčák, Peter – Galbavý, Ondrej – Šimek, Miroslav – Štrbáková, Veronika:
Improving Speech Therapy by Motivational Home Exercises. Supervisor: M. Barla

- Harinek, Jozef: *Extracting Keywords from Educational Content*.
  Supervisor: M. Šimko

- Balucha, Anton: *Identification of Persons by Using Algorithms of Fuzzy Ants*.
  Supervisor: A. Bou Ezzeddine

- Fejes, Máté: *Facial Expression Recognition for Semantic User Modeling*.
  Supervisor: J. Tvarožek

- Vrablecová, Petra: *Relationship Discovery from Educational Content*.
  Supervisor: M. Šimko

- Kompan, Michal: *User's Satisfaction Modelling in Personalized Recommendations*.
  Supervisor: M. Bieliková

- Kučečka, Tomáš: *Attacking the Performance of Okapi BM25 and Tf-Idf*.
  Supervisor: D. Chudá

- Rástočný, Karol: *Usability of Anchoring Algorithms for Source Code*.
  Supervisor: M. Bieliková

- Zeleník, Dušan: *Beyond Code Review: Detecting Errors via Context of Code Creation*. Supervisor: M. Bieliková

- Jánošík, Tomáš: *Extracting Interesting Information from Social Media*.
  Supervisor: P. Návrat

- Molnár, Samuel: *Trending Words in Navigation History for Term Cloud-Based Navigation*. Supervisor: M. Bieliková

- Bilevic, Roman: *Changes of User Interests in Time and Their Application in Search Engines*. Supervisor: T. Kramár

- Bimbo, Miroslav: *User Interest Modelling Based on Microblog Data*.
  Supervisor: M. Šimko

- Burger, Roman: *Personalized Web Documents Organization through Facet Tree*.
  Supervisor: M. Bieliková

- Macko, Peter: *Preprocessing Linked Data in order to Answer Natural Language Queries*. Supervisor: M. Holub

- Michalko, Pavel: *Query Building Method for Texts Similarity Detection in the Web Resources*. Supervisor: D. Chudá

- Ševcech, Jakub: *Related Documents Search Using User Created Annotations*.
  Supervisor: M. Bieliková

- Žilinčík, Michal: *Exploratory Search on Twitter Utilizing User Feedback and Multi-Perspective Microblog Analysis*. Supervisor: P. Návrat

- Móro, Róbert: *Exploratory Search in Digital Libraries Using Automatic Text Summaries*. Supervisor: M. Bieliková

- Šajgalík, Márius: *Using Site Specificity to Build Better User Model from Web Browsing History*. Supervisor: M. Barla, M. Bieliková

- Šimko, Jakub: *Crowdsourcing in the Class*. Supervisor: M. Bieliková

Extended abstracts

- Bednárik, Filip: *An Approach to Crawled Data Semantic Annotation from Selected Domain*. Supervisor: M. Líška

- Briš, Marek: *The Analysis of the User′s Behaviour*. Supervisor: P. Šaloun

- Červeňák, Matej: *Promoting Educational Content by Use Cases*. Supervisor: J. Lang

- Červeňová, Dominika: *Emotion-Aware Movie Recommender Based on Genre Impact Analysis*. Supervisor: D. Zeleník

- Daniš, Igor: *An Approach to Triple Based User Activities Logging and Classification*. Supervisor: M. Líška

- Harsányi, Zoltán: *Identifying Relationships among Entities of Digital Libraries Revealing the Originality of Sources*. Supervisor: V. Rozinajová

- Holub, Michal: *Modeling the Domain of Software Development to Represent Skills of Programmers*. Supervisor: M. Bieliková

- Horváth, Róbert: *Augmenting Web for Facilitating Learning*. Supervisor: M. Šimko

- Labaj, Martin: *User Modelling based on Tabbed Browsing: Browsing Scenarios as a New Source*. Supervisor: M. Bieliková

- Markech, Martin: *Semantic Wiki for Research Groups*. Supervisor: J. Šimko

- Mojžiš, Ján: *SRelation – a Method for Relations Management and Navigation in Big Graph of Linked Data*. Supervisor: M. Láclavík

- Nagy, Balázs: *Metadata Collection for Personal Multimedia Repositories Using Games with a Purpose*. Supervisor: J. Šimko

- Paulovič, Aurel: *Software Transactional Memory for Peer-to-Peer Systems*. Supervisor: P. Lacko

- Šalmík, Jakub: *Personalized Recommendation with Considering of Social Aspects*. Supervisor: M. Kompan

TP CUP Competition

- Adda, Michal – Bado, Dávid – Blšták, Miroslav – Tomčo, Marek – Szorád, Anton – Uhrin, Martin – Zboja, Tomáš: *Discovering and Evaluating Relations in the Field of Science and Research*. Supervisor: N. Andrejčíková

- Arpáš, Jozef – Rais, Jaroslav – Lóderer, Marek – Roško, Michal – Ružička, Pavel – Sudor, Vladimír: *OwNet Android*. Supervisor: M. Barla

- Balko, Karol – Dorner, Michal – Konôpka, Martin – Láni, Marek – Lipták, Martin – Šteňová, Andrea – Tomlein, Matúš: *OwNet: Your Own Personal Internet*. Supervisor: K. Rástočný

- Biroš, Michal – Caban, Tomáš – Kunka, Tomáš – Staňo, Filip – Lekeň, Tomáš – Martinkovič, Milan – Szilva, Bálint: *Emotional State Recognition*. Supervisor: M. Labaj

- Demovič, Ľuboš – Fritscher, Eduard – Kříž, Jakub – Kuzmík, Ondrej – Proksa, Ondrej – Vandlíková, Diana: *Televido - My Personalized TV*. Supervisor: D. Zeleník

- Dulačka, Peter – Filčák, Tomáš – Lihocký, Michal – Ľoch, Lukáš – Michalko, Matúš – Šurek, Marek: *Crowdsourcing Pictures of Real-World Places.* Supervisor: J. Šimko

- Forus, Samo – Gajdoš, Jozef – Geier, Martin – Greguš, Peter – Hudák, Miroslav – Sivák, Peter – Šinský, Peter: *Detecting User's Emotional State.* Supervisor: D. Chudá

- Granec, Michal – Jendek, Tomáš – Kandráč, Ján – Kaššák, Ondrej – Trebuľa, Ján – Urbančok, Maroš – Višňovský, Juraj: *Recommender System for Multimedia Content.* Supervisor: M. Kompan

- Mančík, Gabriel – Mikuda, Šimon – Piták, Juraj – Puckallér, Róbert – Račko, Michal – Rešetár, Jozef – Roško, Bohuš: *Innovative Mobile Game Focused on Environmental Issues.* Supervisor: E. Kuric

9.5 Research Laboratories

Intelligent Systems Laboratory

Manager:	P. Návrat
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.

Mobile Computing Laboratory

Manager:	V. Vranić (UISI), M. Čerňanský (UAPI), I. Kotuliak (UPSS)
Contact:	`valentino.vranic@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).

9.6 Research Projects

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

Project leader:	M. Bieliková
Members UISI:	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 provessing of extensive data sources and to model-driven development of software including post-object paradigms.

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

Project leader:	D. Chudá
Members UISI:	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 infor-

mation. 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. Vranić
Members UISI:	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 and Constructive Modelling, Training and Simulation of Crowd Behaviour in Urban Environment (APVV-0233-10)

Project leader:	P. Lacko for FIIT STU
Members UISI:	I. Kapustík, M. Labaj, J. Lang, A. Paulovič, K. Rástočný, V. Vranić
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 UISI:	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 serach 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 UISI:	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. Bieliková for FIIT STU
Members UISI:	P. Návrat
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.

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

Project leader:	M. Bieliková for FIIT STU
Members UISI:	M. Barla, M. Bieliková, A. Bou Ezzeddine, D. Chudá, M. Holub, M. Kompan, G. Kosková, T. Kramár, T. Kučečka, P. Lacko, P. Mederly, P. Návrat, 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 – January 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

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ANAGNOSTOPOULOS, I. - BIELIKOVÁ, M. - MYLONAS, P. - TSAPATSOULIS, N.: *Semantic Hyper/Multimedia Adaptation* Vol. 418. Studies in Computational Intelligence. Berlin : Springer Verlag, 2013. ISSN 1860-949X

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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

- University of Hannover, L3S Research Center, Hannover, Germany

- 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

- *A. Kovárová, E. Kuric, T. Kramár, M. Šimko:* SOFSEM 2013, Špindlerův Mlýn, Czech Republic, January 26-31, 2013

- *Ľ. Molnár*: 2nd meeting of the open-ended tripartite working group, UNESCO, Paris, France, February 19-22, 2013

- *V. Vranić*: University of Novi Sad, Serbia, April 1, 2013

- *Ľ. Molnár*: 191st session of the Executive Board, UNESCO, Paris, France, April 10-18, 2013

- *M. Bieliková:* Web Science 2013, Paris, France, April 30 – May 5, 2013

- *M. Bieliková:* Brno University of Technology, Czech Republic, May 15, 2013

- *P. Návrat, V. Rozinajová:* Vienna University of Technology, May 16, 2013

- *M. Bieliková, M. Labaj, M. Šajgalík:* UMAP 2013, The 21st Conference on User Modeling, Adaptation and Personalization, Roma, Italy, June 9-15, 2013

- *D. Chudá, T. Kučečka, J. Súkeník:* PPHEAE 2013, Interantional Conference Plagiarism across Europe and Beyond, Brno, Czech Republic, June 12-13, 2013

- *P. Návrat:* Vienna University of Technology, Vienna, Austria, June 13, 2013

- *M. Bieliková, M. Lucká, P. Návrat, V. Vranić:* Brno University of Technology, Czech Republic, June 17, 2013

- *R. Šelmeci:* SCC 2013, IEEE International Conference on Services Computing, Santa Clara, USA, June 26 – July 2, 2013
- *M. Barla, P. Demčák, O. Galbavý, M. Šimek, V. Štrbáková:* Imagine Cup, Petersburg, Russia, July 8-13, 2013
- *R. Móro:* Reasoning Web Summer School, Mannheim, Germany, July 28 – August 3, 2013
- *Š. Sabo:* 5th World Congress on Nature and Biologically Inspired Computing, Fargo, North Dakota, USA, August 9-16, 2013
- *K. Rástočný, M. Šajgalík, J. Kříž:* DEXA 2013, Prague, Czech Republic, August 25-30, 2013
- *J. Lang:* ECBS-EERC 2013, 3rd Eastern European Regional Conference of Computer Based Systems, Budapest, Hungary, August 29-30, 2013
- *Ľ. Molnár:* International Conference Internet and Socio-Cultural Transformations in Information Society, Yuzhno-Sakhalinsk, Russia, September 7-12, 2013
- *J. Ševcech:* 3rd International workshop on Advances in Semantic Information Retrieval (ASIR´13), Kraków, Poland, September 7-13, 2013
- *P. Návrat:* IFIP TC 12 (Artificial Intelligence) meeting, Graz, Austria, September 9, 2013
- *J. Šimko:* ICCCI 2013, 5th International Conference on Computational Collective Intelligence Technologies and Applications, Craiova, Romania, September 10-14, 2013
- *M. Šimko:* DocEng 2013, The ACM Symposium on Document Engineering 2013, Florence, Italy, September 10-13, 2013
- *R. Horváth, I. Srba:* ECTEL 2013, 8th European Conference on Technology Enhanced Learning, Paphos, Cyprus, September 14-21, 2013
- *R. Móro:* TPDL 2013, 17th International Conference onTheory and Practice of Digital Libraries, Valletta, Malta, September 21-*27, 2013*
- *Ľ. Molnár:* 192nd session of the Executive Board, UNESCO, Paris, France, September 23 – October 2, 2013
- *P. Návrat:* ECSS 2013, 9th European Computer Science Summit, Amsterdam, The Netherlands, October 7-10, 2013
- *M. Bieliková M. Barla, J. Šimko:* Datakon, Ostrava, Czech Republic, October 13-15, 2013
- *D. Chudá, V. Rozinajová:* GRIFO 2013, University of West Bohemia, Pilsen, October 14-16, 2013
- *Ľ. Molnár, P. Návrat:* Riga Global Meeting of Experts on the Ethical Aspects of Information Society, Riga, Latvia, October 15-18, 2013
- *Ľ. Molnár:* 37th session of the General Conference of the UNESCO, Paris, France, November 3-14, 2013
- *V. Rozinajová:* Danube Region Business Forum, Vienna, Austria, November 14, 2013

- *J. Tvarožek, M. Šajgalík, J. Kříž, L. Gallay, T. Žuffa, Š. Mikuda, O. Proksa, M. Kalužník:* CERC 2013, Central Europe Regional Contest, Kraków, Poland November 15-18, 2013
- *P. Lacko, T. Kučečka, I. Polášek, M. Ort:* CINTI 2013, 14th IEEE International Symposium on Computational Intelligence and Informatics, Budapest, Hungary, November 18-21, 2013
- *M. Bieliková:* ACM Spy, Prague, Czech Republic, November 27-28, 2013
- *M. Bieliková, D. Chudá:* Vienna University of Technology, Vienna, Austria, November 28, 2013
- *M. Bieliková, M. Kompan, S. Molnár:* SMAP, Bayonne, France, December 11-15, 2013
- *Ľ. Molnár:* UNESCO, Paris, France, December 16-19, 2013
- *M. Bieliková, D. Chudá:* Vienna University of Technology, Vienna, Austria, November 28, 2013

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)

Ľudovít 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)
– Working Group of the Accreditation Commission of Slovakia for Information Sciences and Technologies (member, till June)
– 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; chair, since 1997)
– 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 Vranić

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

Dušan Zeleník

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

International Professional Organisations and Societies

Mária Bieliková

–   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)

Ľudovít 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 since1993. 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 Návrat

- AAAI, Association for the Advancement of Artificial Intelligence (member, since 1993)
- AACE, Association for Advancement of Computers in Education (member, since 1998)
- 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)

Marián Šimko

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

Valentino Vranić

- 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 2013 – 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 2013 – 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 2013 – Informatics and Information Technologies Student Research Conference, April 23, 2013 – M. Bieliková: programme committee chair, M. Barla, A. Bou Ezzeddine, D. Chudá, G. Kosková, A. Kovárová, P. Lacko, M. Laclavík, J. Lang, M. Lekavý, M. Lucká, P. Mederly, Ľ. Molnár, P. Návrat, I. Polášek, V. Rozinajová, P. Šaloun, M. Šimko, J. Tvarožek, V. Vranić: members of programme committee, `http://www.fiit.stuba.sk/iit-src/`

- TP Cup 2013 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 Iternational 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 2013 – secondary school programming competition – I. Dekýšová: event organiser, `http://www.fiit.stuba.sk/profiit`

- RoboCup at FIIT 2013 – Soccer Simulation League, Regional Tournament in Bratislava – I. Kapustík and M. Lekavý: event organisers `http://www.fiit.stuba.sk/robocup/`

- ACIIDS 2013 – 5th Asian Conference on Intelligent Information and Database Systems, March 18-20, Kuala Lumpur, Malaysia – M. Bieliková: member of programme committee

- ADBIS 2013 – 17th East-European Conference on Advances in Databases and Information Systems, September 1-4, 2013, Genova, Italy – M. Bieliková, P. Návrat: member of programme committee, P. Návrat: member of steering committee

- ASONAM 2013 – International Conference on Advances in Social Networks Analysis and Mining, August 25-28, 2013, Niagara Falls, Ontario, Canada – M. Bieliková: member of programme committee

- BCI 2013 – 6th Balkan Conference in Informatics, September 19-21, 2013, Thessaloniki, Greece – M. Bieliková, V. Vranić: member of programme committee

- CASoN 2013 – 5th International Conference on Computational Aspects of Social Networks, August 12-14, 2013, Fargo, North Dakota, USA – M. Bieliková: member of programme committee

- CompSysTech´13 – International Conference on Computer Systems and Technologies, 2013, Ruse, Bulgaria – P. Návrat: member of programme committee

– Datakon 2013 – Annual Conference on Current Trends in Databases and Information Systems, October 13-15, 2013, Ostrava, Czech Republic – M. Bieliková: member of steering committee, member of programme committee

– ENASE 2013 – 8th International Working Conference of Evaluation on Novel Approaches to Software Engineering, July 3-7, 2013, Angers Loire Valley, France – M. Bieliková: member of programme committee

– ECBS-EERC 2013 – 3rd Eastern European Regional Conference on the Engineering of Computer Based Systems, August 29-30, 2013, Budapest, Hungary – V. Vranić: member of steering committee, member of programme committee

– HT 2013 – 24th ACM Conference on Hypertext and Hypermedia, May 1-3, 2013, Paris, France – M. Bieliková: member of programme committee

– ICCCI 2013 – 5th International Conference on Collective Intelligence Technologies and Applications, September 11-13, 2013, Craiova, Romania – M. Bieliková: member of programme committee

– ICETA 2013 – 11th International Conference on Emerging e-learning Technologies and Applications, October 24-25, Starý Smokovec, High Tatras, Slovakia – M. Bieliková: member of programme committee

– ICWL 2013 – 12th International Conference on Web-based Learning, October 6-9, 2013, Kaohsiung, Taiwan – M. Bieliková: member of programme committee

– ITAT 2013 – Workshop on Information Technologies - Applications and Theory, September 11-14, 2013, Donovaly, Slovakia – M. Bieliková: member of programme committee

– MCCIS-ISA 2013 – IADIS Intelligent Systems and Agents, July 22-24, 2013, Prague, Czech Republic – M. Bieliková: member of programme committee

– NWESP 2013 – 9th International Conference on Next Generation Web Services Practices, December 7-8, 2013, Casablanca, Morocco – M. Bieliková: member of programme committee

– PALE 2013 – 3rd International Workshop on Personalization Approaches in Learning Environments, June 10-14, 2013, Rome, Italy – M. Bieliková: member of programme committee

– SCLIT 2013 – 3rd Symposium on Computer Languages, Implementations and Tools, September 21-27, 2013, Rhodes, Greece – V. Vranić: member of programme committee

– SERA 2013 – 11th International Conference on Software Engineering Research, Management and Applications, August 7-9, 2013, Prague, Czech Republic – M. Bieliková: member of programme committee

– SMAP 2013 – 8th International Workshop on Semantic Media Adaptation and Personalization, December 12-13, 2013, Bayonne, France – M. Bieliková: member of programme committee, member of steering committee

– SNAA 2013 – 3nd Workshop on Social Network Analysis and Applicaitons at Int. Conf. on Advances in Social Networks and Mining (ASONAM 2013), August 25-28, 2013, Niagara Falls, Ontartio, Canada – M. Bieliková: member of programme committee

- SOFSEM 2013 – 39th International Conference on Current Trends in Theory and Practice of Informatics, January 26-31, 2013, Špinderlův Mlýn, Czech Republic – M. Bieliková, P. Návrat, V. Vranić: member of programme committee

- SQAMIA 2013 – 2nd Workshop on Software Quality Analysis, Monitoring, Improvement, and Applications, September 15-17, 2013, Novi Sad, Serbia – V. Vranić: member of programme committee

- WEBIST 2013 – 9th International Conference on Web Information Systems and Technologies, May 8-10, 2013, Aachen, Germany – M. Bieliková: member of programme committee

- WIKT 2013 – 8th Workshop on Intelligent and Knowledge oriented Technologies, November 21-22, 2013, Herľany, Slovakia –M. Bieliková, D. Chudá, P. Návrat, V. Rozinajová: members of programme committee

- WWW 2013 – Web Engineering Track – 22[nd]International World Wide Web Conference, May 13-17, 2013, Rio de Janeiro, Brazil – M. Bieliková: member of programme committee

- WWW/Internet 2013 – IADIS International Conference on WWW/Internet, October22-25, 2013, Fort Worth, Texas, USA – M. Bieliková: member of programme committee

- Znalosti 2013 – Annual Conference on Knowledge Acquisition, Discovery, Accessing and Exploitation, October 13-15, 2013, Ostrava, Czech Republic – M. Bieliková, D. Chudá, V. Rozinajová, P. Návrat: 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 2 602 91 689
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 Stovíček, 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 IUWNE)
- Study program for preparation for certification exam CCNA Security (640-554 IINS)

10.3 Cooperation

Cooperation in Slovakia

- Regional Networking Academy, Faculty of Electrical Engineering and Information Technology, Technical University in Košice
- Regional Networking Academy, Faculty of Management Science and Informatics, University of Žilina
- CISCO Systems Slovakia, Ltd.
- GTEC, Ltd.
- SOITRON, Ltd.
- DITEC Ltd.
- Tempest, Ltd.

- Hewlett-Packard Slovakia Ltd.
- IBM Slovakia Ltd.
- Microsoft Slovakia Ltd.
- Siemens Enterprise Communications Ltd.

International Cooperation

- Regional Cisco Networking Academy, Czech University of Technology, Prague, Czech Republic
- Regional Cisco Networking Academy, Faculty of Information Technologies, Technical University in Brno, Czech Republic
- Regional Cisco Networking Academy, Department of Computers, University of West Bohemia in Pilsen, Czech Republic
- Regional Cisco Networking Academy, Technical University in Ostrava, Czech Republic
- CATC Vienna, Austria
- CATC Birmingham, UK

11   10th Anniversary of FIIT

Faculty of Informatics and Information Technologies was established on 1st October 2003, as the only faculty in Slovakia concerned with Informatics and Information Tech-nologies separately. More than 1500 bachelors, more than 1200 engineers and 50 gradu-ants finished studies at FIIT.

On 19th October 2013 we celebrated 10th Anniversary of establishment. On this occasion eminent individualities, who contributed to the establishment and development of our faculty were honoured during the hanging of a celebratory convocation of FIIT STU.
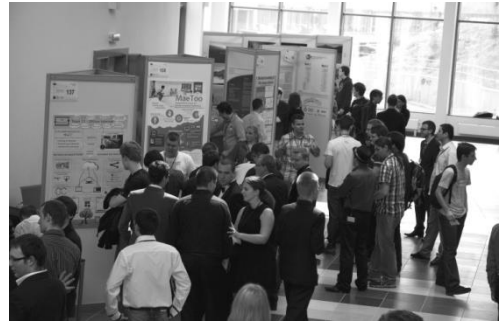
Ľudovít Molnár, the first dean of the faculty, handled a medal of Wolfgang Kempelen from the hands of a recent dean Pavel Čičák. This medal is delivered to the individualities, who contributed to development of the scientific knowledge in the field of Informatics and Information Technologies or for some extra dues related to the development of FIIT STU. The rector of STU delivered him aide-mémoire of arbor vitae as well. Aide-mémoire were delivered to another professors: Mária Bieliková, Pavol Horváth, Milan Kolesár, Vladimír Kvasnička, Ľudovít Molnár, Pavol Návrat and Jiří Pospíchal.

Aide-mémoire and letters of thanks as regards and token for some extra dues related to the development of FIIT STU were delivered to: Mária Bieliková, Norbert Frištacký (in memoriam), Ladislav Hudec, Milan Kolesár, Margaréta Kotočová, Tibor Krajčovič, Jana Minárová, Pavol Návrat, Jiří Šafařík, Martin Šperka, Vladimír Vojtek (in memoriam), Alexandra Bieleková, Alexander Haas, Mária Hricová a Valéria Šimáková.

On the occasion of the International Students´ Day, our students were awarded for the excellent study results, for the excellent bachelor and diploma works as well as for the excellent dissertation thesis.

12 Photo Gallery

13 FIIT Personnel

ABAFFY, Jaroslav, Ing.	Institute of Computer Systems and Networks
ANDREJČÍKOVÁ, Nadežda, Ing. PhD.	Institute of Informatics and Software Engineering
ASTALOS, Róbert, Mgr.	Institute of Informatics and Software Engineering
BABINCOVÁ, Danka, PhDr.	Institute of Informatics and Software Engineering
BAJBÁROVÁ, Ružena	Registry
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
BEČKA, Martin, Mgr. PhD.	Institute of Informatics and Software Engineering
BELAJOVÁ, Lenka	Deanship – Study Affairs
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
BÖHM, Radoslav, RNDr. PhD.	Institute of Informatics and Software Engineering
BOU EZZEDDINE, Anna, RNDr. PhD.	Institute of Informatics and Software Engineering
BRATH, Peter	Centre of Computing and Communication Services
BREIER, Jakub, Ing.	Institute of Applied Informatics
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

CLEMENTIS, Ladislav, Ing.   Institute of Applied Informatics
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
DADO, Boris, Ing.   Institute of Computer Systems and Networks
DRNAJOVÁ, Barbara, Mgr.   Institute of Computer Systems and Networks
DEKÝŠOVÁ, Iveta, JUDr.   Institute of Informatics and Software Engineering
DIEDERICHOVÁ, Ivana, Mgr.   Centre of Computing and Communication Services
DRAHOŠ, Peter, Ing. PhD.   Institute of Applied Informatics
DRGONEC, Vladimír, Ing.   Centre of Computing and Communication Services
DÚBRAVSKÝ, Jozef, Ing. PhD.   Department of Tech. Operation and Management
ĎURÍČEK, Maroš, Ing.   Institute of Computer Systems and Networks
FALBOVÁ, Lucia, Mgr.   Centre of Information and Library Services
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
FURKOVÁ, Andrea, Ing. PhD.   Centre of Computing and Communication Services
GALANOVÁ, Jana, doc. RNDr. PhD.   Institute of Informatics and Software Engineering
GALBAVÝ, Miroslav, Ing.   Institute of Applied Informatics
GENČI, Ján, doc. Ing. PhD.   Institute of Applied Informatics
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   Institute of Informatics and Software Engineering
GRÚBEROVÁ, Alena, Bc.   Institute of Computer Systems and Networks
HABAJOVÁ, Eva   Deanship – Economics
HALAGAN, Tomáš, Ing.   Institute of Computer Systems and Networks
HELEBRANDT, Pavol, Ing.   Institute of Computer Systems and Networks
HARSÁNYI, Zoltán, Ing.   Institute of Informatics and Software Engineering
HLÁVKOVÁ, Eva   Department of Tech. Operation and Management
HOLUB, Michal, Ing.   Institute of Informatics and Software Engineering
HORNÝ, František   Department of Tech. Operation and Management
HORVÁTH, Pavol, prof. Ing. PhD.   Institute of Computer Systems and Networks
HRICOVÁ, Mária   Deanship – Research
HRUBÝ, Martin, Ing.   Institute of Computer Systems and Networks
HRVOL, Peter   Centre of Computing and Communication Services
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