**FACULTY OF INFORMATICS
AND INFORMATION TECHNOLOGIES**

http://www.fiit.stuba.sk

ANNUAL REPORT
2004

Slovak University
of Technology
in Bratislava

Contents

1 Introduction

Activities in Informatics and Information Technologies (IIT) have been present in the Slovak University of Technology documents since 1962 when the first computer was installed at the University. The Annual Report of 2004 can be perceived as having special significance for the IIT community because it shows activities in IIT which were carried out by the newly established faculty of the Slovak University of Technology – Faculty of Informatics and Information Technologies (FIIT STU).

The Annual Report is devoted mainly to the activities of FIIT STU carried out in 2004, nevertheless, it also outlines activities related to the very beginning of the FIIT STU dated back to the end of 2003. FIIT STU came into existence on October 1, 2003 after it was established by the Rector's Decree Nr. 627/2003 – of July 30, 2003 which came into power on October 1, 2003. The Faculty has been based on human and material resources of the former Department of Computer Science and Engineering, FEI STU. All the teaching and non-teaching staff of the former Department became the first employees of the FIIT STU. The PhD students of the study programmes Applied Informatics, Program and Information Systems and Computer Tools and Systems became the first students of the FIIT STU.

FIIT STU has been granted the right to perform final examinations in the following study programmes:

- – *Informatics* in undergraduate/bachelor (Bc) study,
- – *Informatics* in graduate/master (Ing) study,
- – *Applied Informatics* in postgraduate/doctoral (PhD) study,
- – *Program and Information Systems* in doctoral (PhD) study and
- – *Computer Tools and Systems* in doctoral (PhD) study.

The most important activities to be carried out at the very beginning of the Faculty existence are required by law – the Act 131/2002 of the University Code and by the STU Statutes. Thus the FIIT STU established its Academic Senate, elected the Dean and approved the Vice-Deans. It elaborated and approved basic internal documents, established and approved the Scientific Board of the Faculty, designed and approved the organisational structure of the Faculty and appointed directors of the institutes at the Faculty. Strategic long-term aims for the Faculty development were elaborated and approved by the Scientific Board of the Faculty. This is the document which states the framework for activities described in this Annual Report of 2004.

The mission of the Faculty of Informatics and Information Technologies is to contribute to the mission of the Slovak University of Technology in the range of its competencies in the

related areas. The mission of FIIT STU in the area of education is to prepare professionals in IIT for national and international labour market, to offer a flexible educational system at all the three levels – undergraduate/bachelor, graduate/master and postgraduate/doctoral, to offer study programmes which would be attractive for the secondary school graduates, as well as for the university graduates. The content of the study programmes is fully compatible with the international standards and recommendations of respectful international organisations, such as ACM, IEEE Computer Society, or UNESCO. As the reader can see, the study programmes have been innovated as for their width and depth. The intention also is to increase the number of students. For the academic year 2004/2005, 300 students are to be admitted to the first year of bachelor programmes. We are very proud that the number of applicants for the bachelor programmes was more than 3 times higher than we were able to admit.

Research is of high priority at FIIT STU. The emphasis, however, is given not solely to research per se, but also to its interlink with education, particularly in graduate and post-graduate study. The Report summarizes not only the research projects we have been working on, but above all, it shows the results achieved by the staff, as well as by students.

The organisational structure of the Faculty is derived from the main activities in education and research and it corresponds to the study programmes offered above all in the graduate programmes. Institutes are the basic organisational units of the Faculty.

The Faculty cooperates with academic and business organisations professional orientation of which is informatics and information technologies. The cooperation is based on re-search and educational activities.

The Report shows the current state the Faculty has achieved in education, research and cooperation with business partners. It also shows the current stage in the long-term strategy of the Faculty development.

Prof. Ľudovít Molnár
Dean of the FIIT STU

2 Faculty Management Bodies

According to the Act No. 131 of February 21, 2002 of 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 is divided into the employee part and the student part.

Members of the Academic Senate in 2004

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

> *Pavol Návrat, Professor*
> chair
> `chair@as.fiit.stuba.sk`
>
> *Milan Kolesár, Professor*
> chair of the employee part
>
> *Matej Makula*
> chair of the student part

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

> Mária Hricová

Members of the employee part of the Academic Senate
`staff@as.fiit.stuba.sk`

Igor Grellneth, PhD.

Ladislav Hudec, Assoc. Professor

Milan Kolesár, Professor

Mária Markošová, PhD.

Jana Minárová, Assoc. Professor

Pavol Návrat, Professor

Martin Nehéz

Juraj Štefanovič, PhD.

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

Michal Ďurfina

Matej Makula

Vladimír Marko

Ján Máté

Activities of the Academic Senate of the Faculty in 2004

The Academic Senate of the Faculty of Informatics and Information Technologies in 2004

– elaborated, discussed and approved the Statutes of the Faculty,

– elaborated, discussed and approved the Academic Senate Election Rules,

– discussed the proposal of study programmes of the Faculty presented by the Dean,

– approved the additional conditions for admission to the study programmes offered by the faculty, presented by the Dean,

– approved the members of the Disciplinary Commission of the Faculty and its Chairman, as presented by the Dean.

Prof. Pavol Návrat
Chair Academic Senate FIIT STU

2.2 Dean

The Dean is the representative of the Faculty who manages, represents and acts on behalf of the faculty. The current Dean was elected by the Academic Senate of the Faculty in its meeting held on December 12, 2003 for a four year office period.

Ľudovít Molnár, Professor
Dean
`dean@fiit.stuba.sk`

Mária Bieliková, Assoc. Professor
Vice-Dean for research and human resources
`vicedean_research@fiit.stuba.sk`

Pavel Čičák, Assoc. Professor
Vice-Dean for national and international relations and for public relations
`vicedean_cooperation@fiit.stuba.sk`

Margaréta Kotočová, 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 2004

Chair of the Scientific Board

Ľudovít Molnár, Professor

Deputy chair of the Scientific Board

Mária Bieliková, Assoc. Professor

Members from the academic community of the Slovak University of Technology

Mária Bieliková, Assoc. Professor

Pavel Čičák, Assoc. Professor

Peter Farkaš, Professor

Pavol Horváth, Professor

Ladislav Hudec, Assoc. Professor

Milan Kolesár, Professor

Margaréta Kotočová, Assoc. Professor

Tibor Krajčovič, Assoc. Professor

Vladimír Kvasnička, Professor

Mária Markošová, PhD.

Ľudovít Molnár, Professor

Pavol Návrat, Professor

Zdenka Riečanová, Professor

Martin Šperka, Assoc. Professor

Vladimír Vojtek, Professor

External members

Milan Češka, Professor – Brno University of Technology

Ladislav Hluchý, PhD. – Institute of Informatics, Slovak Academy of Sciences

Štefan Kimlička, Professor – Comenius University in Bratislava

Josef Kolář, Assoc. Professor – Czech Technical University in Prague

Milan Krokavec, Professor – Technical University of Košice

Karol Matiaško, Assoc. Professor – University of Žilina

Stojan Russev, Professor – University of Economics in Bratislava

Jiří Šafařík, Professor – University of West Bohemia in Pilsen

Honorable members

Norbert Frištacký, Professor – Slovak University of Technology in Bratislava

Activities of the Scientific Board of the Faculty in 2004

The Scientific Board of the Faculty of Informatics and Information Technologies in 2004

- approved the rules of procedure of the Scientific Board of the Faculty presented by the Dean,

- discussed the long-term strategy of the Faculty development for the 2004-2009 prepared in accordance with the long-term strategy of the Slovak University of Technology in Bratislava,

- discussed and approved the proposal of the study programmes for the academic year 2004/2005 offered by the Faculty,

- discussed, approved and submitted to the Scientific Board of the University the habilitation criteria for "associate professors" and the inauguration criteria for "professors"; the criteria were approved by the Scientific Board of the University,

- endorsed other experts with the right to conduct Final examinations in the study programmes offered by he Faculty (in accordance with the University Code),

- endorsed supervisors for the PhD study in newly accredited study programmes,

- approved the Boards of Specialists in the following study programmes: Applied Informatics, Artificial Intelligence, Computer Engineering, and Software Engineering the role of which is to monitor and evaluate the PhD study programmes,

- discussed, approved and submitted to the Scientific Board of the University general and specific criteria for filling posts of "professors" and "associate professors" at the Faculty; the criteria were approved by the Scientific Board of the University.

- conferred the academic degree „philosophie doctor" on:
  - Ahmed AbdAllah Hassan,
  - Valentino Vranić,
  - Tomáš Seidmann.

Prof. Ľudovít Molnár
Chair 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.

Chair of the Disciplinary Commission of the Faculty

Ladislav Hudec, Assoc. Professor

Members of the Disciplinary Commission of the Faculty

Juraj Štefanovič, PhD.

Martin Nehéz

Ján Žiak - student of the doctoral degree program

Peter Horný - student the master degree program

Michal Ďurfina - student of the bachelor degree program

3   Study

3.1 Undergraduate Study (Bc)

In the academic year 2003/2004 undergraduate programme in Informatics was offered. The programme contains two specialisations (study majors) – Software Engineering and Computer Engineering. The programme is accredited by the British Engineering Council following an accreditation process carried out by the Institution of Electrical Engineers (UK). Regular length of study is 4 years.

Since the academic year 2004/2005 FIIT STU offers newly accredited study programmes:

- *Informatics* – regular length 3 years,
- *Computer Systems and Networks* (as an orientation in Computer Engineering) – regular length 3 years.

The following table shows the numbers of full-time bachelor programme students throughout the study (from the first to the final year). In the academic year 2002/2003 the students of the Telecommunication specialisation were included in the numbers of students (except of the first year).

Numbers of the full-time bachelor programme students

		1st year	2nd year	3rd year	4th year
Academic year	2002/2003	120	127	198	145
	2003/2004	150	103	123	134
	2004/2005	333[1]	112	95	156

On the course we have 6 overseas students.

The number of graduates in Informatics in 2004 was 91, 77 out of whom were students of Software Engineering and 14 out of whom were students of Computer Engineering. The students successfully defended their bachelor theses and passed the final examination.

On the following students were conferred awards for their excellent study results:

- *Dean's Award – The best student of the course:* Martin Niejadlik, Juraj Obert, Ľudovít Lučenič. These students also completed their studies with honour "*Summa cum laude*".

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[1] Number of enrolled students out of the 480 admitted.

- *Dean's Award – The best Bachelor Thesis:* Martin Donoval, Ladislav Gažo, Marek Gregor, Peter Khandl, Michal Moravčík, Martin Šoltis, Peter Trnovský, Miroslav Vnuk.
- *IEEE Award:* Juraj Obert, Martin Donoval, Ladislav Gažo, Marek Gregor.

1 337 applicants took place in the entrance examination to bachelor study programmes on June 7, 2004. The written examination consisted of mathematics (20 tasks, 50 points max.) and informatics (12 tasks, 30 points max.) or physics (10 tasks, 30 points max.). The second subject was optional. 480 applicants were admitted (312 Informatics, 168 Computer Systems and Networks), 333 out of whom were enrolled (210 Informatics, 123 Computer Systems and Networks).

3.2 Master Study (Ing)

In the academic year 2003/2004 the Informatics graduate study programme was offered. The programme consists of four specialisations (study majors) – Software Engineering, Computer Engineering, Security in the Information Technologies, and Business Enterprise in Informatics. The programme is accredited by the British Engineering Council following an accreditation process carried out by the Institution of Electrical Engineers (UK). Regular length of study is three semesters.

Since the academic year 2004/2005 FIIT STU offers a newly accredited study programmes:

- *Software Engineering* – regular length 2 years[2],
- *Computer systems and networks* (as an orientation in Computer Engineering) – regular length 2 or 3 years.

Numbers of the full-time master programme students

	2002/2003	167
Academic year	2003/2004	151
	2004/2005	182[3]

The number of graduates in Informatics in 2004 was 68. 19 out of them succeeded in defending their master thesis and passed the final examination in January 2004, and 49 in June 2004.

The following students completed their studies with honour *"Summa cum laude":* Peter Blšták, Marián Cvečka, Matúš Horváth, Peter Lacko, Vladislav Novák, Martin Ševčík, Peter Trebatický, Kristián Vedrödy, Pavol Zajac.

On the following students were conferred awards for their excellent results:

- *Dean's Award – The best student of the course:* Peter Blšták, Matúš Horváth, Martin Ševčík, Kristián Vedrödy, Pavol Zajac.

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[2] 3 years for students who have not obtained their first degree in related field.
[3] 121 students were admitted and 111 out of them enrolled.

- *Dean´s Award – The best Master Thesis:* Matúš Ferenc, Matúš Horváth, Michal Kolarovič, Štefan Kružlík, Peter Lacko, Ivan Stašák, Róbert Ševčík, Michal Takács, Kristián Vedrödy, Pavol Zajac.

- *Werner von Siemens Excellence Award for Master Thesis:* Peter Trebatický: Recurrent neural network training with the extended Kalman filter. May 2004.

- *Slovak Academy of Sciences Award:* Martin Ševčík.

- *Institute of Informatics, Slovak Academy of Sciences Award:* Peter Trebatický.

- *Tatra Bank Award:* Peter Blšták.

121 applicants took place in the entrance examination on June 6, 2004 as a prerequisite to the master programmes. 111 students enrolled the study (72 Software Engineering, 39 Computer Systems and Networks)

3.3 Doctoral Study (PhD)

Quality and number of doctoral students significantly influence the results obtained in research. We observe an insufficient number of doctoral students in the field of informatics and information technologies. The graduates have excellent opportunities in finding positions on the labour market, therefore, even if they are interested in further studies they often prefer to be admitted as part–time students. This trend, however, has been discontinued now. The number of full-time doctoral students is on an increase.

Evolution of number of doctoral full-time students

Year	1999	2000	2001	2002	2003	2004
Number of students	18	14	10	11	16	22

Number of defended dissertations increased. In 2004 three dissertations were defended:

- *Ahmed AbdAllah Hassan*: On the Modeling and Management of the security of Data Communication Networks,

- *Tomáš Seidmann*: Distributed Shared Memory in Modern Operating Systems,

- *Valentino Vranić*: Multi-Paradigm Design with Feature Modeling.

The indicated trend gives provisions for continual improvement of this situation.

In 2004 the FIIT STU admitted students for study in newly accredited study programmes in doctoral study for the first time. Four study programmes have been accredited:

- *Applied Informatics,*

- *Computer Systems and Networks* (as an orientation in Computer Engineering),

- *Program Systems* (as an orientation in Software Engineering),

- *Artificial Intelligence*.

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

3.4 Student Conferences and Competitions

The Faculty organised in 2004 several student competitions and conferences. The importance of involvement of the students in such events is very high. Students in 2004 took active participation in various technical and research activities (co)organised by the Faculty:

–   ACM International Collegiate Programming Contest 2004 (university contest as a part of the CTU Open and regional contest in Budapest),

–   ACM CZ Student 2004,

–   IEEE Computer Society International Design Competition (CSIDC 2004),

–   ProFIIT – Programming Competition for Secondary School Students,

–   RoboCup, Soccer Simulation League,

–   Student Research Conference (to be mentioned in the following Section devoted to research in more detail).

Assoc. Prof. Margaréta Kotočová
Vice-Dean for education (first and second levels)

Assoc. Prof. Mária Bieliková
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. This has been specified by the 6th European Framework Programme and its priorities. The research at FIIT STU is oriented on these main research areas that respect the organisation, existing technical and laboratory equipment and professional skills:

- the methods and tools for security and administration of network and mobile computer systems,
- collaborative access, analysis and presentation of documents in the world-wide-web by the use of modern software tools,
- information development in distributed environment of intelligent agents,
- methods and tools for software systems development,
- the use of computer graphics in virtual and augmented reality systems,
- "echo state" neural networks and recurrent neural networks,
- application of evolutionary algorithms in theory of multi-agent systems,
- the design methods and tools for application-specific digital systems,
- parallel systems for real-time computing,
- formal methods and tools for design and description of digital systems,
- embedded computer systems,
- fault-tolerant high-speed parallel and distributed computer structures.

4.2 Scientific Activities

FIIT STU has organised or co-organised in year 2004 several scientific events:
- scientific conference *CiOS 2004 – Communication in Optical Systems,*

- scientific conference *Cognition and Artificial Life IV,*
- scientific conference *IBM for the Universities,*
- scientific workshop *E-Learning Technology,*
- scientific conference *ICETA 2004 – 3rd International Conference on Emerging Telecommunications Technologies and Applications,*
- international congress *ITAPA 2004 – Congress on Information Technologies and Public Administration,*
- scientific conference *SCCG 2004 – Spring Conference on Computer Graphics.*

The Faculty took part in providing technical and scientific programmes, especially through the work in programme committees of 27 conferences 14 out of which 14 were international. Among the most noteworthy the following can be mentioned:

- ADBIS, East-European Conference on Advances in Databases and Information Systems,
- AIAI, IFIP International Conference on Artificial Intelligence Applications and Innovations,
- DATE, Design Automation and Test in Europe,
- DDECS, Diagnostics and Design of Electronic Circuits and Systems Central European Conference,
- ISD, International Conference on Information Systems Development,
- ISIM, International Conference on Information Systems Implementation and Modelling,
- ITI, International Conference on Information Technology Interfaces,
- iiWAS, International Conference on Information Integration and Web-based Applications and Services,
- JCKBSE, Joint Conference on Knowledge-Based Software Engineering,
- MENDEL, International Conference on Soft Computing,
- SAC, ACM Symposium on Applied Computing Special Track on Database Theory, Technology, and Applications,
- SCCG, Spring Conference on Computer Graphics,
- SOFSEM, Annual Conference on Current Trends in Theory and Practice of Informatics.

In 2004 FIIT STU organised or co-organised several events oriented to exhibition of research work of students (accomplished in the student projects). Above all, it was the students' research conference which was held on April 24, 2004. 13 students participated with their works. The best of them took part in the international Czech and Slovak contest of student research projects STUDENT EEICT 2004 which was organised jointly by FIIT and FEI STU.

The finals of the 2nd ACM CZ Student Research Competition were organised in November 2004 in Prague. Ten best bachelor and master student projects from 6 universities from the Czech Republic and Slovakia were presented. The project Extraordinary Message Service (XMS) authored by our undergraduates Ladislav Gažo, Martin Donoval, Marek Gregor and Juraj Obert won the 2nd place.

4.3 Publications

Results of our research were published in 81 papers, which represents a 97% increase in comparison with 2003 (or 76% per capita increase). 59 scientific contributions were published in conference proceedings, 32 out of which were published in reviewed proceedings of international conferences. 13 scientific contributions were published in scientific journals and we have authors (co-authors) of 9 books.

FIIT STU is a co-publisher of the international scientific journal „Computing and Informatics" (until 2001 Computers and Artificial Intelligence). Two faculty staff members, Prof. Návrat and Prof. Frištacký, are members of its editorial board.

Number of publications in 2004	UAPI[4]	UISI	UPSS	**FIIT**
Books	4	5	-	9
Scientific works published in reviewed scientific journals	4	6	1	11
Scientific works published in journals	2	-	-	2
Scientific works published in conference proceedings	20	24	16	60
Presentations at scientific conferences and congresses	28	27	16	71
Citations	38	19	1	58

Overview of other most significant activities in 2004	UAPI	UISI	UPSS	**FIIT**
Membership in editorial boards of scientific journals	4	2	1	7
Membership in programme committees of international scientific conferences	4	8	2	14
Membership in programme committees of national scientific conferences	4	7	3	13
Membership in steering committees of scientific conferences	1	3	0	4

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.

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[4] 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 of Slovak Republic and the Slovak Academy of Sciences (VEGA) formed an essential form of research organisation and scientific projects funding at the FIIT STU. In 2004 seven VEGA projects progressed. One project was completed in 2004 and two new projects started. The Faculty, under the leadership of Prof. Návrat, participated in 2 international projects.

It is important that in the first year of FIIT STU existence several projects were prepared and approved for funding. Three projects submitted in 2004 started in the same year. These projects are together with the above mentioned projects described in reports of institutes presented in the following parts. Four projects were submitted to the Science and Technology Assistance Agency for years 2005-2007. All these projects were approved for funding.

The projects were realized in research laboratories (description can be found in the parts devoted to individual institutes). In 2004 the following six research laboratories were included in the Slovak University of Technology network of high-tech laboratories:

−   Virtual Reality Laboratory, head: M. Šperka,

−   Laboratory of Database Technologies, head: V. Vojtek,

−   Intelligent Systems Laboratory, head: P. Návrat,

−   Advanced Software and Web Technologies Laboratory, head: M. Bieliková,

−   Computer Networks Laboratory, head: P. Čičák,

−   Embeded Systems Laboratory, head: T. Krajčovič.

FIIT STU raised funds for five IT development projects supported by the Ministry of Education of Slovak Republic:

−   Project of the centre of e-learning technologies on the basis of Cisco Networking Academy program, project leader: P. Čičák,

−   Education in the field of internet applications development and e-business, project leader: M. Bieliková, L. Hudec,

−   New faculty − Faculty of Informatics and Information Technologies development, project leader: Ľ. Molnár,

−   Development of computer network of the FIIT STU, project leader: T. Krajčovič,

−   Support of internet and intranet on-line access of students, project leader: T. Krajčovič.

Number of projects funded in 2004	UAPI	UISI	UPSS
VEGA	5	1	1
KEGA	-	1	-
State programmes of research and development	-	1	-
European Social Funds	-	1	-
International projects	-	1	-
FIIT STU	**5**	**5**	**1**

Overview of funds (in thousands SKK)	UAPI	UISI	UPSS
VEGA	1 158	855	462
KEGA	-	120	-
State programmes of research and development	-	2 140	-
European Social Funds	-	87	-
International projects	-	72	-
FIIT STU	**1 158**	**3 274**	**462**

Assoc. Prof. Mária Bieliková
Vice-Dean for research

5 National and International Relations

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

5.1 Cooperation with Secondary Schools

Cooperation with secondary schools lies in preparation for study at the university especially at the FIIT STU, organising a programming contest called ProFIIT, and in technical cooperation.

Technical cooperation with secondary schools is achieved especially through the Regional Cisco Networking Academy programme. FIIT STU, as the Regional Cisco 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 19 secondary schools.

5.2 Cooperation with Industry

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

Training and Consultation Activities

FIIT STU has been very successful in training and consultations in cooperation with the companies Cisco System Slovakia Ltd., Microsoft Slovakia Ltd. and GTEC Ltd. In cooperation with Cisco Systems the Faculty has been integrated into the world-wide academy programme oriented to training in network technologies. Nowadays Regional Cisco Networking Academy of the FIIT STU offers a full 4-semester programme CCNA (Cisco Certified Networking Associate) and 1-semester CCNP (Cisco Certified Networking Professional) program. Two instructors of our RCNA were trained in Birmingham thanks to remarkable support of the company Tronet Ltd.

In a similar way, in cooperation with Microsoft, FIIT STU joined in 2004 to the IT Academy program.

In co-operation with GTEC Common Training and Consultation Centre (CTCC) was established. The main purpose of this centre is to offer technical training for the non-academy sphere. There are two special Networks technology Laboratories in this CTCC.

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 Tronet Ltd., BGS Ltd., DITEC Ltd., DATALAN Ltd., ASSET Ltd., HP Slovakia Ltd.

Other remarkable support the Faculty has obtained in cooperation with IBM Slovakia, Microsoft Slovakia, SUN Microsystems, SIEMENS and ORACLE. Cooperation with the above mentioned companies is based on special agreements.

5.3 Mobility programmes

FIIT STU has established various international relations for the purposes of students' and teachers' mobilities. Cooperation within the mobility programme Socrates/Erasmus is supported now under three new contracted agreements:

– FH Nordakademie, Elmshorn, `www.nordakademie.de`

– ISEP, Institut Superieur d'Electronique de Paris, Paris, `www.isep.fr`

– TUW, Vienna University of Technology, `www.tuwien.ac.at`

In 2004, one incoming Erasmus student visited FIIT STU (from FH Nordakademie) and three our teachers were visiting the ISEP Paris. In the next year, we plan to arrange Socrates/Erasmus cooperation with these institutions:

– University of Maribor, Faculty of Electrical Engineering and Computer Science, Slovenia, `www.feri.uni-mb.si`

– Brno University of Technology, Faculty of Information Technology, Czech Republic, `www.fit.vutbr.cz/`

Besides the Socrates agreements, a special agreement of cooperation was established with the Institut Superieur d'Electronique de Paris (ISEP). Based on this agreement, students from ISEP will be visiting FIIT STU each summer for the training period of 1 month (July) to do their mandatory students' internship. In summer 2004 we hosted 8 students.

Based on the special agreement of cooperation with the Institut für Softwaretechnik und Interaktive Systeme, Vienna University of Technology (`www.ims.tuwien.ac.at`), three our students started working on their diploma projects in cooperation with the research projects solved on that institute.

Assoc. Prof. Pavel Čičák
Vice-Dean for public relations

Juraj Štefanovič, PhD.
Socrates Erasmus coordinator

6   Faculty Services

6.1 Information and Library Services

Centre for Information and Library Services at the Faculty of Informatics and Information Technologies (CIKS) provides information services for study and research purposes at FIIT STU.

The book catalogue contains 5 580 items which are freely available in the Library. The catalogue can be found on `http://olib.cvt.stuba.sk`. The Centre for Information and Library Services purchased and acquired thanks to donation 49 titles of professional journals (mainly ACM, IEEE membership) in various languages (6 out of them are in Slovak). Journals and selected books are located in the Study Room.

The information services make available, within the FIIT STU environment, 12 external electronic databases (Science Direct, ACM Digital Library, EEE Computer Society Digital Library, EI Engineering Village 2, EIFL Direct – EBSCO host, IoP Electronic Journals, Journal Citation Report, Oxford Reference Online, The Scientific World, Web of Science, Willey Encyclopedia of Electrical and Electronics Engineering), include several fulltext accesses.

The Centre for Information and Library Services also covers loan of the books and magazines and lending basic assistance besides information search.

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 computer network
- new computers, printers, scanners etc. installation
- operation systems and specialized software installation
- upgrading and maintenance of computers
- services for students wire and wireless access points to the Internet
- functioning of the camera security system
- data projectors installation

The Faculty computer network is based on a structured cable system and it is using 100 Mbps transfer speed. It consists of approximately 80 personal computers of the faculty

25

staff and PhD students, 100 personal computers and workstations in the education and research laboratories and 10 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.

Assoc. Prof. Tibor Krajčovič
Vice-Dean for development

7 Institute of Applied Informatics

E-mail:	uapi@fiit.stuba.sk
Web:	http://uapi.fiit.stuba.sk
Tel:	+421 2 654 295 02
Fax:	+421 2 654 205 87

The institute specializes in the area of applied informatics. The scientific and professional activities of the institute concentrate mainly on the area of database systems, data mining, information processing in distributed environment of intelligent agents; further topics of interest lay in application of computer graphics in virtual reality systems and in systems of enhanced reality, in visualization and human – computer interaction; in the area of computational intelligence (neural networks, evolutionary algorithms, artificial life, simulation of social systems) and in the area of computational physics (stochastic nonlinear methods, modelling of discrete dynamic systems).

The institute is responsible for the following degree programmes:

– Informatics (master degree),
– Applied informatics (doctoral degree).

7.1 Staff

Director
Vladimír Vojtek, Professor

Deputy director
Vladimír Kvasnička, Professor

Administrative department
Zuzana Macková

Teaching staff
Miroslav Galbavý
Vladimír Kvasnička, Professor
Jana Parízková
Jiří Pospíchal, Assoc. Professor
Martin Šperka, Assoc. Professor
Juraj Štefanovič, PhD.

Branislav Steinmüller
Peter Tiňo, PhD.
Vladimír Vojtek, Professor

Researchers

Michal Čerňanský
Mária Markošová, PhD.
Viliam Solčány

External teachers

Ondrej Strnád, PhD.

PhD students

Peter Angelovič
Michal Bielik
Alena Kovárová
Peter Lacko
Matej Makula
Michal Takács
Peter Trebatický
Ján Žiak

7.2 Teaching

Undergraduate Study (Bc.)

Course	Semester	Credits	Lecturer
Algorithms and Programming	Autumn	6	V. Vojtek J. Pospíchal
C Programming	Spring	0	M. Markošová
Computer Graphics	Autumn	6	M. Šperka
Database Systems	Autumn	7	V. Vojtek
IT Security Management	Spring	5	O. Strnád
Mathematical Logic	Autumn	6	V. Kvasnička
Modelling and Simulation	Spring	6	V. Solčány
Operating Systems	Spring	6	J. Štefanovič
Operating Systems Design	Spring	6	J. Štefanovič

Master Study (Ing.)

Course	Semester	Credits	Lecturer
Computer Graphics II	Autumn	6	M. Šperka
Database systems II	Spring	5	V. Vojtek
Intelligent Data Analysis	Spring	5	M. Markošová
Multimedia Computer Systems	Spring	5	M. Šperka
Neural Networks	Autumn	5	V. Kvasnička

7.3 Theses

Bachelor (Bc.) Theses

– Rastislav Ambruš: *Multimedia information in regional IS-2*. May 2004. Supervisor: M. Galbavý.

– Peter Argaláš: *Printed document with augmented reality*. May 2004. Supervisor: J. Štefanovič.

– Daniel Brnák: *Probabilistic structure of directed percolation model in square lattice*. May 2004. Supervisor: M. Markošová.

– Andrej Burger: *Visual design of security policy for Medusa DS9 system*. May 2004. Supervisor: B. Steinmüller.

– Miroslav Dávid: *Monitoring processes in UNIX operating system.* May 2004. Supervisor: B. Steinmüller.

– Peter Dušek: *Virtual graffiti*. May 2004. Supervisor: J. Štefanovič.

– Marek Fučila: *Optical orientation in the centre of city*. May 2004. Supervisor: J. Štefanovič.

– Pavol Gono: *Visual design of security policy for system Medusa DS9.* May 2004. Supervisor: B. Steinmüller.

– Michal Grosoš: *Echo state neural network simulator*. May 2004. Supervisor: M. Čerňanský.

– Hamar, Jozef: *Tools for heuristic definition of security policy.* May 2004. Supervisor: B. Steinmüller.

– Erik Horváth: *Algorithm visualisation*. May 2004. Supervisor: J. Parízková.

– Miroslav Jakubovský: *Monitoring of processes in operating system UNIX*. May 2004. Supervisor: B. Steinmüller.

– Roman Jančiga: *Developing environment for operating system*. May 2004. Supervisor: J. Štefanovič.

– Martin Jenčo: *Architectural bias of recurrent neural networks*. May 2004. Supervisor: M. Čerňanský.

– Martin Konôpka: *Symbol sequence generator for neural networks*. May 2004. Supervisor: M. Makula.

– Marek Koprla: *Multimedia version of teaching 1*. May 2004. Supervisor: M. Galbavý.

– Marek Kováč: *Distributed simulation environment based on Web3D technique*. May 2004. Supervisor: M. Šperka.

– Peter Luciak: *A tool for heuristic definition of security policy.* May 2004. Supervisor: B. Steinmüller.

– Peter Mihalik: *Environment for embedded CAVE virtual reality*. May 2004. Supervisor: M. Šperka.

– Michal Moravčík: *Archiving system for project management*. May 2004. Supervisor: V. Vojtek.

- Peter Mulinka: *Program for simulation and visualization of mountains*. May 2004. Supervisor: M. Šperka.

- Peter Orosi: *Communication network as a graph of the "small world"*. May 2004. Supervisor: M. Markošová.

- Michal Petrov: *Models of recurrent neural networks based on architectural bias*. May 2004. Supervisor: M. Čerňanský.

- Miroslav Salai: *Multimedia information in regional information system*. May 2004. Supervisor: M. Galbavý.

- Tomáš Smolek: *Multimedia information in regional information system-1*. May 2004. Supervisor: M. Galbavý.

- Miloš Sýkora: *Backup & recovery in relation database management system Oracle*. May 2004. Supervisor: V. Vojtek.

- Bohuslav Szabo: *Multimedia utilization in teaching Informatics*. May 2004. Supervisor: M. Galbavý.

- Radomír Škrib: *Database backup and recovery*. May 2004. Supervisor: V. Vojtek.

- Michal Štípek: *Learning in the Internet environment*. May 2004. Supervisor: J. Parízková.

- Peter Tóth: *Augmented reality application in virtual presentations of architecture*. May 2004. Supervisor: M. Šperka.

- Milan Žužo: *Generator of symbolic sequences for neural networks*. May 2004. Supervisor: M. Makula.

Master (Ing.) Theses

- Roman Babuščák: *Ancillary analytic instruments of transportation information system*. May 2004. Supervisor: M. Galbavý.

- Milan Hajas: *Waves of avalanches*. May 2004. Supervisor: M. Markošová.

- Matúš Horváth: *Visualization of RBAC policy changes*. May 2004. Supervisor: B. Steinmüller.

- Maroš Ivančo: *Modeling of Complex Systems*. December 2004. Supervisor: M. Hurtoň.

- Rastislav Klč: *Distance education and virtual university - knowledge testing*. December 2004. Supervisor: M. Galbavý.

- Michal Kolarovič: *Processing of time sequences by recurrent neural networks*. May 2004. Supervisor: M. Čerňanský.

- Matej Košík: *Programming constructs in actors computational model*. May 2004. Supervisor: M. Hurtoň.

- Michal Košťál: *The building operating system in the actors model point of view*. May 2004. Supervisor: M. Hurtoň.

- Eugen Križo: *Percolation backbones on the square lattice*. December 2004. Supervisor: M. Markošová.

- Štefan Kružlík: *Multimedia support of transportation information system*. May 2004. Supervisor: M. Galbavý.

- Peter Lacko: *An application of neural networks and evolutionary algorithms to the design of strategy in symmetric games.* May 2004. Supervisor: V. Kvasnička.

- Marián Mirc: *Animation of processor activity.* December 2004.
  Supervisor: J. Parízková.

- Juraj Mlynár: *Software visualisation system.* May 2004. Supervisor: J. Parízková.

- Pavol Mišík: *Automatic errors corrections in text game of chess.* December 2004.
  Supervisor: I. Jarolin.

- Branislav Pariža: *Talking face.* May 2004. Supervisor: M. Šperka.

- Michal Sartoris: *Creating multimedia presentation using formal specification.*
  May 2004. Supervisor: M. Šperka.

- Branislav Síleš: *Augmented reality system.* May 2004. Supervisor: M. Šperka.

- Martin Spál: *Decision support based on „artificial life".* May 2004.
  Supervisor: V. Vojtek.

- Michal Takács: *An intelligent interface to secure web applications.* May 2004.
  Supervisor: V. Vojtek.

- Peter Trebatický: *Recurrent neural network training with the extended Kalman filter.* May 2004. Supervisor: M. Čerňanský.

- Zdenek Tubel: *Health state monitoring systems.* December 2004.
  Supervisor: V. Vojtek.

- Kristián Vedrödy: *Processing symbolic sequences using LSTM networks.*
  May 2004. Supervisor: M. Makula.

- Juraj Žitniak: *Modelling plants.* May 2004. Supervisor: R. Janči.

7.4 Research laboratories

Virtual Reality Laboratory

Head:	M. Šperka
Contact:	`martin.sperka@fiit.stuba.sk`
Description:	Laboratory serves mainly educational needs (students' projects in courses Computer Graphics, Multimedia computer systems and Human-computer interaction, with best students' results published at international conferences). The laboratory is equipped with programs for 3D modelling (3D Studio Max, Alias/Wavefront Maya), web cameras, and stereoscopic devices. Further equipment, like data projectors for creating immersive virtual reality, quality cameras and augmented reality glasses for enriched reality modelling is planned in the near future.

Laboratory of Database Technologies

Head:	V. Vojtek
Contact:	`vladimir.vojtek@fiit.stuba.sk`
Description:	The laboratory is oriented towards support of research tasks which use in some stages of solution a database environment or which deal with

security issues of database and information systems. Further application is in database application including multimedia applications, Global Information Systems, on-line transaction processing, on-line analytical processing, data-mining, data warehouses, internet access to databases, applications of CASE systems. The laboratory is equipped with SUN Enterprise 250 server and tens of SunRay workstations and some PC's. Software equipment includes database environment Oracle 8.1.6, MySQL, PostgreSQL, MS SQL Server, and Progress v8.

7.5 Research projects

Information Processing in Distributed Environment of Intelligent Agents (VEGA 1/0161/03)

Project leader:	V. Vojtek
Members:	M. Galbavý, Ľ. Molnár, V. Solčány, B. Steinmuller, M. Šperka, J. Štefanovič, P. Tiňo, J. Žiak, O. Grošek, K. Čipková, M. Greško, L. Satko, M. Vojvoda
Supported by:	Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences
Duration:	January 2003 – December 2005
Description:	Design of methods for intelligent accessing, processing and presentation of information in distributed environment. Design of model for a distributed representation of a virtual environment composed of colonies of independent, but communicating agents capable of searching and processing information on the bases of its structural semantic specification with an emphasis on security during transfer and saving, and on authenticity of information. The goal of the project is to find suitable theoretical, as well as practical solutions which would be compatible with requirements on security, as well as transfer rate and user comfort during work in a distributed environment.

Nonlinear Methods in Theory of Neural Networks (VEGA 1/9046/02)

Project leader:	M. Markošová
Members:	Ľ. Beňušková, M. Čerňanský, M. Makula, P. Tiňo
Supported by:	Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences
Duration:	January 2002 – December 2004
Description:	In this project we have been solving two types of problems. Namely, we analysed a neural network from the point of view of the nonlinear dynamical system and we studied discrete nonlinear dynamical systems with regard to neural networks. The results can be summarized as follows. We studied the properties of randomly initialised recurrent neural networks, both experimentally and theoretically. We have shown that their dynamics resembles the dynamics of Markovian models. We used dynamically randomly initialised neural network to solve the problems with Markovian dynamics. Moreover, we studied the model of directed site percolation on the square lattice and its probabilistic structure. For the probabilistic structure we have found

an analytical expression. We have shown, that the lexicon of Slovak language has a small world character and we modelled the process of lexicon evolution of child by the self organising neural network.

Echo State Neural Networks (VEGA 1/1047/04)

Project leader: J. Pospíchal

Members: V. Kvasnička, M. Čerňanský, Š. Babinec, J. Babjak, P. Lacko, M. Makula, P. Sarkoci, P. Trebatický

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

Duration: January 2004 – December 2006

Description: The goal of the project is to study a modern approach to recurrent neural networks which is particularly suitable for both a time series prediction and modelling of cognitive processes in artificial neural systems. Neural network in this approach includes a block of neurons with a recurrent architecture which is randomly generated and the weight coefficient of its connections are fixed during the learning stage of the network. The input activities incoming to the neural network will be mapped onto a rich dynamic structure of activities of hidden neurons which are used as an input to the output neurons layer. The learning of this network consists in adjusting of weight coefficients between hidden neurons and output neurons. Weight coefficients between the hidden and the input neurons and in-between the hidden neurons are randomly generated and do not change during the learning stage. Current research emphasis is on an evolutionary improvement of networks bringing more robustness to the predictions quality.

Artificial Chemistry and Molecular Evolution (VEGA 1/0062/03)

Project leader: V. Kvasnička

Members: J. Pospíchal, M. Čerňanský, Š. Babinec, J. Babjak, P. Lacko, M. Makula, P. Sarkoci, P. Trebatický

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

Duration: January 2003 – December 2005

Description: Biotic and abiotic molecular systems with kinetics determined by Eigen's replicator system are studied by methods of artificial chemistry. Molecules are represented by strings of tokens over a finite alphabet. These molecules are capable of a physical process called "folding" (an analogy with biomacromolecules RNA). Each molecule is evaluated by fitness on the basis of its particular folding. Molecules are placed in a chemical-reaction system where they take part in a reproduction process (with probabilities proportional to their fitness) consisting in a simple copying accompanied with mutations. The present *in-silico* approach offers conceptual and notional machinery for a deeper theoretical interpretation and description of molecular Darwinian evolution. In a swarm adaptation, such a system can also serve as a general optimization tool, using chemistry only as a metaphor for purely computational purposes.

7.6 Publications

Journals

KAPUSTA, R., ŠPERKA, M.: Reconstructing 3D surfaces from the images of scene using structured light. In: *G – slovenský časopis pre geometriu a grafiku.* (G – Slovak Journal for Geometry and Graphics) – Vol.1, No.2, (2004), pp. 5-12. (in English)

KVASNIČKA, V.: Holographic reduced representation in artificial intelligence. In: *Neural Network World.* – Vol. 14, No. 6, (2004), pp. 521-532. (in English)

LACKO, P., KVASNIČKA, V., POSPÍCHAL, J.: An emergence of game strategy in multiagent systems. In: *Int. Journal of Computational Intelligence and Applications.* – Vol. 4, No. 3 (2004), pp. 283-298. (in English)

PARÍZKOVÁ, J.: The Graphics Animation of the Program. In: *Informatika v škole.* (Informatics in School) – No. 28 (2004), pp. 19-24. (in Slovak)

PARÍZKOVÁ, J., MLYNÁR, J.: Method for visualisation of data flow in program. In: *Slovenský učiteľ* (Slovak Teacher, supplement of journal Technológia vzdelávania/Educational Technology) – No. 8 (2004), pp. 8-10. (in Slovak)

ŠPERKA, M.: Hard Reality of the Slovak Universities. In: *Profit.* – No.1-2 (2004), pp. 51-53. (in Slovak)

ŠPERKA, M.: Virtual Reality or Augmented Reality. In: *Profit.* – No.17-18 (2004), pp. 30-32. (in Slovak)

ŠPERKA, M.: Geometry in Graphics and Multimedia Courses at the FIIT STU Bratislava. In: *G – slovenský časopis pre geometriu a grafiku.* (G – Slovak Journal for Geometry and Graphics) – Vol.1, No.1 (2004), pp. 55-66. (in English)

TIŇO, P., ČERŇANSKÝ, M., BEŇUŠKOVÁ, Ľ.: Markovian Architectural Bias of Recurrent Neural Networks. In: *IEEE Trans. on Neural Networks.* – Vol. 15, No.1 (2004), pp. 6-15. (in English)

Conferences

BABINEC, Š., POSPÍCHAL, J.: Optimization in Echo state neural networks by Metropolis algorithm. In: *Cognition and Artificial Life IV*: Hradec nad Moravicí, Czech Republic, May 2004. - pp.35-44. (in Slovak)

BABINEC, Š., POSPÍCHAL, J.: Optimization in Echo state neural networks by Metropolis algorithm. In: *10th Int. Conf. on Soft Computing MENDEL 2004*: Brno, Czech Republic, 2004. - pp. 155-160. (in English)

ČERŇANSKÝ, M., MAKULA, M., BEŇUŠKOVÁ, Ľ.: Processing Symbolic Sequences by Recurrent Neural Networks Trained by Kalman Filter-Based Algorithms. In: *SOFSEM 2004: Theory and Practice of Computer Science.* Volume II.: Měřín, Czech Republic, January 2004. - pp. 58-65. (in English)

ČERŇANSKÝ, M., MAKULA, M.: The Memory in Random Inicialized Recurrent Neural Networks. In: *Cognition and Artificial Life IV*: Hradec nad Moravicí, Czech Republic, May 2004. - pp. 117-127. (in Slovak)

DRAHOŠ, P., KAPEC, P.: Animating Human Faces Using Modified Waters Muscle Model. In: *8th Central European Seminar on Computer Graphics, CESCG 2004*, Budmerice, April 2004. M. Šperka (supervisor) -pp. 141-148.

GEJGUŠ, P., PLAČEK, J., ŠPERKA, M.: Skin color segmentation method based on mixture of Gaussians and its application in Learning System for Finger Alphabet. In: *Int. Conf. on Computer Systems and Technologies (e-Learning) CompSysTech´04*: Rousse, Bulgaria, June 2004. - pp. IIIA.1-1 – IIIA.

GEJGUŠ, P., NIKLOVÁ, A., PLAČEK, J., ŠPERKA, M.: Interactive Learning System for Sign Language and Finger Alphabet. In: *E-Learning Conf.*, Flemish Academic Center for Science and the ArtsKoninklijke, Brussels, Belgium, September 2004. (in English).

KOVÁROVÁ A.: Multimedia Support for Teaching Physics. In: *5th Int. Conf. Virtual Reality VU´04:* Bratislava, December 2004. - pp. 194-198. (in English)

KOVÁROVÁ, A., CZANNER, S.: Interactive Simulations of Elementary Physical Experiments. In: *First Central European Int. Multimedia and Virtual Reality Conf.*, Veszprém, Hungary, May 2004, - pp. 109-116 (in English)

KOVÁROVÁ, A.: Multimedia Support for Teaching Physics. In: *ACM Student 2004 Finals,* Prague, Czech Republic, November 2004. - 8 p. (in English)

KVASNIČKA, V., POSPÍCHAL, J.: Replicator Theory of Coevolution of Chomsky's Universal Grammars and Generative Grammars. In: *SOFSEM 2004*: *Theory and Practice of Computer Science*. Proceedings Volume II.: Měřín, Czech Republic, January 2004. - pp. 115-123. (in English)

KVASNIČKA, V., POSPÍCHAL, J.: Holographic reduced representation in artificial intelligence and cognitive science. In: *Cognition and Artificial Life IV*: Hradec nad Moravicí., Czech Republic, Mat 2004. - pp. 299-321. (in Slovak)

KVASNIČKA, V.: Replicator theory of co-evolution of genes and memes. In: *2nd Slovakian-Hungarian Joint Symposium on Applied Machine Intelligence*, *SAMI 2004:* Košice-Herľany*,* January 2004. - pp. 7-30. (in English)

KVASNIČKA, V., POSPÍCHAL, J.: Holographic reduced representation in artificial intelligence and cognitive science. In: *ICSC 2004, 2nd Int. Conf. on Soft Computing Applied in Computer and Economic Environments*: Kunovice, Czech Republic, January 2004. - pp. 305-328. (in English)

KVASNIČKA, V., POSPÍCHAL, J.: Holographic reduced representation in artificial intelligence and cognitive science. In: *DATAKON 2004*: Brno, Czech Republic, October 2004. - pp. 263-270. (in English)

LACKO, P.: Evolutionary emergence of game strategy in multiagent systems. In: *Cognition and Artificial Life IV*: Hradec nad Moravicí, Czech Republic, May 2004. - pp. 333-351. (in Slovak)

MAKULA, M., ČERŇANSKÝ, M., BEŇUŠKOVÁ, Ľ.: Approaches Based on Markovian Architectural Bias in Recurrent Neural Networks. In: *SOFSEM 2004*: 30th Conf. on Current Trends in Theory and Practice of Computer Science. Měřín, Czech Republic, January 2004. - pp.257-264. (in English)

MAKULA, M., ČERŇANSKÝ, M.: Neural Networks based on echo states. In: *Cognition and Artificial Life IV*: Hradec nad Moravicí, Czech Republic, May 2004. - pp. 363-371. (in Slovak)

MAKULA, M., ČERŇANSKÝ, M.: Evaluation of neural network performance based on entropy. In: Int. Conf. and Competition of students' scientific works *STUDENT EEICT 2004*: Bratislava, May 2004. - pp. 172-175. (in English)

MARKOŠOVÁ, M.: Language as a small world network. In: *Cognition and Artificial Life IV*: Hradec nad Moravicí, Czech Republic, May 2004. - pp. 397-405. (in Slovak)

SEDLÁČEK, M.: Evaluation of RGB and HSV models in Human Faces Detection. In: *8th Central European Seminar on Computer Graphics, CESCG 2004,* Budmerice, April 2004. M. Šperka (supervisor) - pp. 125-131.

SOLČÁNY, V., ŠAFAŘÍK, J.: Cumulative Lookahead in Conservative Parallel Simulation . In: *5th EUROSIM Congress* on Modeling and Simulation: Marne la Vallée, France, September 2004. - pp. 65-66. (in English)

ŠPERKA, M.: Web 3D and New Forms of Human Computer Interaction. In: *2nd Int. Symposium of Interactive Media Design:* Istanbul, Turkey, January 2004. – pp. 117-122. (in English)

ŠPERKA, M., PLAČEK, J., SMETANOVÁ, A., GEJGUŠ, P.: Augmented Reality and E-Training: Learning Finger Alphabet. In: *5th Int. Conf. Virtual Reality VU'04:* Bratislava, December 2004. - pp. 39-43. (in English)

ŠPERKA, M.: WEB3D – Virtual Reality for Every Home: Students projects at the FIIT STU. In: *Informatics and Information Technologies 2004*. Banská Bystrica, 2004. - pp. 125-129. (in English)

TAKÁCS, M., VOJTEK, V.: Intelligent Interface for Web Applications. In: *DATAKON 2004:* Brno, Czech Republic, October 23-26, 2004. - pp. 311-320. (in English)

TREBATICKÝ, P.: Recurrent Neural Network Training with the Extended Kalman Filter. In: *ACM Student 2004 Finals*, Prague, Czech Republic, November 2004. – 8 p. (in Slovak)

Books

KELEMEN, J., KVASNIČKA, V. /eds./: *Cognition and artificial life IV*. Hradec nad Moravicí, May 2004 : proceedings. – Opava: Slezská univerzita, 2004. 559 p. – ISBN 80-7248-232-7 (in Slovak)

Chapters of Books

POSPÍCHAL, J.: Evolution of unconscious cooperation in proportional discrete time harvesting. In: P. Sinčák, J. Vaščák, K. Hirota (Eds.): *Machine Intelligence, Quo Vadis?* World Scientific Publishing, Singapore, 2004, pp. 385-402. (in English)

KVASNIČKA, V.: Artificial chemistry, replicators, and molecular Darwinian evolution in silico. In: P. Sincak, J. Vascak, K. Hirota (Eds.): *Machine Intelligence, Quo Vadis?* World Scientific Publishing, Singapore, 2004, pp. 403-425. (in English)

Kvasnička, V., Gál, E., Pospíchal, J.: Memetics „in silico". In: J.Nosek (ed.): *Memy ve vědě a filosofii?* – Prague : Filosofia, Nakladatelství FU AV Czech Republic, 2004. pp. 101-119, ISBN 80-7007-196-6(in Slovak)

7.7 Cooperation

Cooperation in Slovakia

– Faculty of Social and Economical Sciences, Comenius University, Project of development of Cognitive Science (responsible person E. Gál, PhD.)

– Faculty of Mathematics, Physics and Informatics, Comenius University, project of development of Cognitive Science (responsible person J. Šefránek, Assoc. Professor, J. Rybár, Assoc. Professor)

– Faculty of Electrical Engineering, Technical University Košice, Development of modern methods of education in Computational Intelligence (responsible person P. Sinčák, Professor)

– Faculty of Mathematics, Physics and Informatics, Neural network modelling of complex systems (responsible person I. Farkaš, PhD.)

– Institute of Measurement, Slovak Academy of Sciences, EEG analysis with a help of mathematical statistics, neural networks and nonlinear methods (responsible person V. Witkovský, PhD.)

– Ministry of Economy of the Slovak Republic, design of information system

International Cooperation

– Institute fuer Softwaretechnik und Interaktive Systeme, Technische Universität, Wien, Austria (exchange student in Augmented Reality projects)

– 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) – preparation of common syllabus and mobility for students and teachers

– Faculty of Philosophy and Science, Silesian University in Opava: Organisation of a seminar on Artificial Life and Cognition (responsible person J. Kelemen, Professor)

– Faculty of Informatics, Humboldt University in Berlin, database and information systems

Visits of Staff Members

– *M. Šperka*: 2nd Int. Symposium of Interactive Media Design, ISIMD 2004, Istanbul, Turkey, January 4-8, 2004

– *V. Kvasnička*: Masaryk University, Brno, Czech Rebuplic, January 13, 2004

– *M. Čerňanský, V. Kvasnička, M. Makula:* SOFSEM 2004, Měřín, Czech Republic, January 24-30, 2004

– *J. Pospíchal:* Selesian University, Opava, Czech Republic, April 8, 2004

- *V. Kvasnička*: Institute of Informatics, Czech Academy of Sciences, Czech Rebuplic, April 26, 2004
- *J. Pospíchal:* Technical University, Brno, Czech Republic, May 21, 2004
- *V. Vojtek:* Humboldt University, Berlin, Germany, May 26-27, 2004
- *M. Čerňanský, V. Kvasnička, P. Lacko, M. Makula, M. Markošová, J. Pospíchal:* Cognition and Artificial Life, Hradec nad Moravicí, Czech Republic, May 26-30, 2004
- *M. Galbavý:* IT Security, Wien, Austria, June 3, 2004
- *M. Šperka:* European Commission, Assessment of Erasmus Mundus Proposals, Brussels, Belgium, June 8-13, 2004
- *M. Šperka*: CompSysTech 2004, Rousse, Bulgaria, June 15-20, 2004
- *J. Pospíchal:* 10th Int. Conf. on Soft Computing Mendel 2004, Brno, Czech Republic, June 15-18, 2004
- *A.* Kovárová: Europrix Top Talent Award 2005 (jury member), Salzburg, Austria, September, 2004
- *V. Solčány:* 5th Eurosim Congress on Modelling and Simulation, Paris – Cité Descartes, France, September 5-11, 2004
- *M. Šperka:* E-learning Conf., Brussels, Belgium, September 5-9, 2004
- *V. Kvasnička, M. Takács:* Datakon 2004, Brno, Czech Republic, October 23-26, 2004
- *M. Šperka, J. Štefanovič:* Computer Science Education Workshop 2004, Trojanovice, Czech Republic, October 14-15, 2004
- *M. Markošová*: Socrates/Erasmus mobility, I.S.E.P. Paris, France, October 17-28, 2004
- *M. Šperka:* Socrates/Erasmus mobility, I.S.E.P.Paris, France, October 17-23, 2004
- *J. Štefanovič:* Socrates/Erasmus mobility, I.S.E.P. Paris, France, October 17-24, 2004
- *M. Šperka:* Assessment of Erasmus Mundus Proposals, Brussels, Belgium, November 17-19, 2004
- *M. Šperka:* European Academy of Digital Media Instructors Network Conference and Europrix Multimedia Top Talent Award Festival, Wien, Austria, November 20-21, 2004
- *A.* Kovárová: European Academy of Digital Media Instructors Network Conference and Europrix Multimedia Top Talent Award Festival, Wien, Austria, November 20-21, 2004
- *M. Čerňanský, M. Makula:* Microsoft, Prague, Czech Republic, November 16-19, 2004
- *A. Kovárová, P. Trebatický:* ACM Student, Prague, Czech Republic, November 26-27, 2004
- *V. Kvasnička, J. Pospíchal:* Masaryk University, Brno, Czech Republic, December 16, 2004

Visitors to the Institute

– 8 students from I.S.E.P. (`http://www.isep.fr`) Institut Superieur d'Electronique de Paris, France, study stay for 1 month (organised by M. Markošová, M. Šperka, D. Malina and J. Štefanovič)

7.8 Membership in Professional Organisations and Societies

Slovak Professional Organisations and Societies

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

Vladimír Kvasnička

– Slovak Academic Society (founding member, since 1997)

– Slovak Artificial Intelligence Society (chairman, since August 29, 2000)

– Slovak Computer Science Society (member, since 1996)

Jiří Pospíchal

– Slovak Artificial Intelligence Society (member, since August 29, 2000)

– Slovak Computer Science Society (member, since 1996)

International Professional Organisations and Societies

Martin Šperka:

– Europen Academy of Digital Media (EADIM) (fellow, since 2001)

– EADIM Instructors Network (vice chairman, since 2003)

Viliam Solčány

– ACM member (member, since May 2004)

Jiří Pospíchal

– EURO Working group on fuzzy sets (EUROFUSE) (member, since 1999)

7.9 Other Activities

– Journal of Computing and Information Technology – V. Vojtek: member of advisory board, since 1993

– MATCH Communications in Mathematical Chemistry – V. Kvasnička: member of advisory board, since 1998

– Neural Network World – V. Kvasnička: member of advisory board, since 2001

– Croatica Chimica Acta – V. Kvasnička: member of advisory board, since 2002

– SOFSEM 2004 – 30th Annual Conference on Current Trends in Theory and Practice of Informatics, January 25–29, 2004, Měřín, Czech Republic – V. Kvasnička: member of programme committee

– ITI2004 – 26th International Conference on Information Technology Interfaces, Zagreb – V. Vojtek: member of programme committee

– DATAKON 2004, Brno, Czech Republic – V. Vojtek: member of programme committee

- Cognition and Artificial Life IV, Opava, Czech Republic – V. Kvasnička: deputy chairman of steering committee

- The 6th International Conference on Information Integration and Web-based Applications and Services, September 27-29, 2004, Jakarta, Indonesia – M. Šperka: member of programme committee

- MENDEL 2004 – 10th International Conference on Soft Computing, Brno, Czech Republic - V. Kvasnička, J. Pospíchal: members of programme committee

- Spring Conference on Computer Graphics, April 22-24, Budmerice, Slovakia – M. Šperka: member of programme committee

- Top Talent Award 2004 in Salzburg. A. Kovárová: member of international selection committee

- Organisation of a soft computing seminar in collaboration with Department of Mathematics FCHPT STU,
  `http://darwin.chtf.stuba.sk/scsem/predprog.html`

- Organisation of a Colloquium on logic and model theory in collaboration with Department of Mathematics FCHPT STU,
  `http://sioux.chtf.stuba.sk/logicsem/`

- Co-organisation of a Fourth Conference on Cognition and Artificial Life,
  `http://ui.fpf.slu.cz/KUZIV/info.htm`

- 1 graduate student spent a term as a research guest at Interactive Media Systems Group, Vienna University of Technology within SAIA Austrian-Slovak cooperation

- 2 graduate students worked 2 terms on diploma thesis solved in collaboration with Interactive Media Systems Group at Vienna University of Technology

8 Institute of Computer Systems and Networks

E-mail: upss@fiit.stuba.sk
Web: http://upss.fiit.stuba.sk
Tel: + 421 2 602 91 548
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 and computing, 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 each of the three levels of university education:

– Computer Systems and Networks (bachelor degree),

– Computer Systems and Networks (master degree),

– Computer Systems and Networks (doctoral degree).

The institute has been active and successful in research and reflects in research the current development of computer engineering in the world. Our research is funded by grants from the Slovak Research Grant Agency.

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
   Milan Kolesár, Professor

Deputy director
   Ladislav Hudec, Assoc. Professor

Administrative department
   Zuzana Macková

Teaching staff
   Pavel Čičák, Assoc. Professor
   Boris Dado
   Norbert Frištacký, Professor
   Igor Grellneth, PhD.
   Ján Hudec
   Ladislav Hudec, Assoc. Professor
   Katarína Jelemenská, PhD.
   Milan Kolesár, Professor
   Margaréta Kotočová, Assoc. Professor
   Tibor Krajčovič, Assoc. Professor
   Dušan Malina
   Elena Tomalová

Researchers
   Dušan Bernát
   Jamal Hasan, PhD.
   Daniela Kotmanová

External teachers
   Pavol Horváth, Professor
   Elena Gramatová, PhD.

PhD students
   Adrian Bagala
   Roland Bott
   Hossam El-Ddin M. Hussin
   Timotej Török

8.2 Teaching

Undergraduate Study (Bc.)

Course	Semester	Credits	Lecturer
Computer Architecture Systems	Spring	6	J. Hudec K. Jelemenská M. Kolesár T. Krajčovič
Logic Systems	Autumn	6	N. Frištacký M. Kolesár

Course	Semester	Credits	Lecturer
Computer Architecture I	Autumn	6	L. Hudec
Machine Level Programming	Autumn	5	P. Čičák
Final Bachelor Project I	Autumn	6	K. Jelemenská
Final Bachelor Project II	Spring	6	K. Jelemenská
Computer Networks I	Autumn	6	M. Kotočová
Peripheral Devices	Autumn	6	P. Horváth
Computer Interfacing	Autumn	6	P. Čičák
Computer Networks II	Spring	6	M. Kotočová
Embedded Systems	Spring	6	T. Krajčovič
Specification and Description Languages	Autumn	6	K. Jelemenská
Digital Equipment Construction	Autumn	6	D. Malina
Diagnostics and Reliability	Spring	6	E. Gramatová
Microprocessors and Microcomputers	Spring	6	T. Krajčovič
Programmable Logic	Spring	6	M. Kolesár
Informatics I	Autumn	6	M. Kolesár

Mater Study (Ing.)

Course	Semester	Credits	Lecturer
Diploma Project I-III (Computer Systems and Networks)	Autumn Spring	4	L. Hudec
Computer Architecture II	Autumn	4	L. Hudec
Parallel Processing	Spring	5	D. Bernát
VLSI Architectures	Spring	5	M. Kolesár
Digital Systems Design	Spring	6	N. Frištacký
Digital Systems Formal Models	Spring	5	N. Frištacký
Digital Systems Testing	Autumn	5	E. Gramatová
Computer Networks III	Autumn	5	M. Kotočová
Computing Systems Security	Spring	6	L. Hudec

8.3 Theses

Bachelor (Bc.) Theses

– Matej Aradský: *System for e-learning assistance*. May 2004. Supervisor: M. Kotočová.

– Tomáš Backo: *Control unit development application environment on the microprocessor module basis*. May 2004. Supervisor: P. Čičák.

– Vladimír Balaš: *Test pattern generator for bridging faults in combinational circuits*. May 2004. Supervisor: E. Gramatová.

– Bau er Helmut: *Certification Authority*. May 2004. Supervisor: L. Hudec.

- Rastislav Bódi: *Internet application for user data registration*. May 2004. Supervisor: I. Grellneth.

- Juraj Buno: *Chip card user authentication*. May 2004. Supervisor: D. Bernát.

- Jozef Burák: *Control unit development application system on a microcomputer basis*. May 2004. Supervisor: P. Čičák.

- Ondrej Hluchý: *The system for task administration for e-learning*. May 2004. Supervisor: M. Kotočová.

- Marian Janovič: *Technical support for teaching of machine level languages*. May 2004. Supervisor: P. Čičák.

- Daniel Katana: *Modification of computer measurement system*. May 2004. Supervisor: R. Kinder.

- Martin Kerni: *Testing the security weaknesses of computer networks*. May 2004. Supervisor: L. Hudec.

- Peter Khandl: *The design and simulation of benchmark digital system on chip for verification of testing architectures*. May 2004. Supervisor: E. Gramatová.

- Ladislav Kluka: *Analyzer of combinatorial logical circuits with normal structure*. May 2004. Supervisor: M. Kolesár.

- Ján Kovaľ: *Administration and solving tasks system*. May 2004. Supervisor: M. Kotočová.

- Matej Kubík: *Penetration testing of computer networks*. May 2004. Supervisor: L. Hudec.

- Tomáš Laho: *Register transfer level simulator of computer*. May 2004. Supervisor: E. Tomalová.

- Roman Lenz: *User interface for a simulator of a simple computer*. May 2004. Supervisor: E. Tomalová.

- Juraj Malcho: *Experimental microcomputer*. May 2004. Supervisor: T. Krajčovič.

- Peter Markusek: *Self-test generator as a part of the automatic test generator DefGen*. May 2004. Supervisor: E. Gramatová.

- Peter Pullmann: *Storage information system*. May 2004. Supervisor: D. Malina.

- Pavol Skočík: *Gate-structure logical circuits editor*. May 2004. Supervisor: M. Kolesár.

- Erik Šille: *Utilization of WANIPIPE - router*. May 2004. Supervisor: J. Hasan.

Master (Ing.) Theses

- Marek Bédy: *Computer network management*. May 2004. Supervisor: M. Kotočová.

- Ernest Beinrohr: *Router configuration education system*. May 2004. Supervisor: K. Jelemenská.

- Ján Blšák: *Mental poker in computer network*. May 2004. Supervisor: M. Greško.

- Marián Cvečka: *Control of security vulnerabilities testing in computer networks*. May 2004. Supervisor: L. Hudec.

- Vít Fargaš: *Possibilities of protection of access to informational-communicational infrastructure of Slovak University of Technology.* December 2004. Supervisor: P. Horváth.

- Radovan Fraňo: *Automatic generation system of self-test blocks for memories modeled in VHDL.* December 2004. Supervisor: M. Fischerová.

- Peter Hlocký: *Embedded multiprocessor system.* December 2004. Supervisor: T. Krajčovič.

- Marek Hrablay: *Embedded multiprocessor system.* December 2004. Supervisor: T. Krajčovič.

- Peter Jůzl: *Automatic design of two-stage hazard free logical combinational circuits with multiple outputs.* May 2004. Supervisor: M. Kolesár.

- Martin Lacko: *Coding/decoding Reed Solomon codes on interactive web.* December 2004. Supervisor: I. Grellneth.

- Rastislav Lauko: *Automatic functional test generator for digital systems.* December 2004. Supervisor: E. Gramatová.

- Marcel Mesároš: *Computer network security testing control.* December 2004. Supervisor: L. Hudec.

- Michal Mistrík: *Computer network visualisation.* May 2004. Supervisor: M. Kotočová.

- Antal Molnár: *Software supporting for design and projecting computer networks.* May 2004. Supervisor: P. Čičák.

- Viliam Otepka: *Program internationalization with Unicode support.* May 2004. Supervisor: B. Dado.

- Juraj Prokša: *Delay faults test generator for full-scan sequential circuits.* December 2004. Supervisor: E. Gramatová.

- Ivan Stašák: *Recovery system for OS UNIX.* May 2004. Supervisor: D. Bernát.

- Róbert Ševčík: *System for automatic synthesis of built-in self-test architecture for digital circuits modelled in VHDL.* May 2004. Supervisor: E. Gramatová.

- Ivan Varga: *Design and implementation of a system for synthesis and simulation of sequential synchronous circuits.* May 2004. Supervisor: E. Tomalová.

- Marián Velický: *Monitoring and configuration computer network.* May 2004. Supervisor: M. Kotočová.

- Marek Závodský: *Automatic design of multilevel hazard-free combinational logic circuits.* May 2004. Supervisor: M. Kolesár.

Doctoral (PhD.) Theses

Student name:	Ahmed AbdAllah Hassan
Degree program:	Computer systems and tools
Thesis title:	On the Modeling and Management of the security of Data Communication Networks
Supervisor:	Ladislav Hudec, Assoc. Professor
Defended on:	February 26, 2004
Annotation:	To enforce the network security policy, the network administrator has to transfer the high-level network security policy to a low-level firewall configuration file. By examining a sample of the high-level network security policy and another sample of the low-level firewall configuration file, we can positively say that there is a big gap between the high-level and low-level forms of the network security policy. The existence of this gap makes the transformation, maintenance, verification or even modification of the policy is a very hard task. The original contributions of the PhD thesis are (1) introducing, applying and verifying a role-based network security (RBNS) model that acts as an intermediary-level between high-level security policy and low-level firewall configuration file; (2) developing and implementing a compilation algorithm that can be used to automatically generate low-level firewall configuration file from the RBNS intermediate-level; (3) designing and realizing an algorithm that verifies the equivalence between high-level and low-level forms of the security policy.

8.4 Research laboratories

Computer Networks Laboratory

Head:	P. Čičák
Contact:	`pavel.cicak@fiit.stuba.sk`
Description:	The research and teaching laboratory is predefined for teaching computer networks to undergraduates and graduates in the study programme Computer systems and networks. In this laboratory operates the Cisco Networking Academy Program, too. The students are to show their practical and theoretical skills. They are involved in design, implementation and verification of applications for computer networks. The laboratory is equipped with modern network components and respective software tools.

Embedded Systems Laboratory

Head:	T. Krajčovič
Contact:	`tibor.krajcovic@fiit.stuba.sk`
Description:	The research and teaching laboratory is predefined for teaching embedded systems, microprocessors and microcomputers, computer interfacing and digital equipment construction to undergraduates in the study programme Computer Systems and Networks, orientation in Computer Engineering. The students are to prove practical and

theoretical skills. They are involved in design, implementation and verification of the applications for microprocessors and other digital devices in real-time applications. The laboratory is equipped with modern computers with internet connection and other hardware and software components and tools (logic analyzer, in-circuit emulators, Bluetooth development kits, Pentium II based embedded system development kit) necessary for practical teaching.

VLSI Design Laboratory

Head: J. Hudec
Contact: `jan.hudec@fiit.stuba.sk`
Description: The research and teaching laboratory is predefined for teaching of programmable logic devices in graduate study of Computer systems and networks, branch Computer engineering. The students are targeted for proving practical and theoretical skills. They are involved in design, implementation and verification of applications for programmable logic and gate arrays. The laboratory is equipped with modern computers with internet connection and other hardware and software components and tools (XACT for XILINX, SYNOPSYS) for programmable circuits PLD and FPGA practical teaching.

8.5 Research projects

Methods and Tools for Development of Secure Networked and Distributed Mobile Computer Systems and their Management (VEGA 1/0157/02)

Project leader: L. Hudec
Members: A. Bagala, D. Bernát, P. Čičák, B. Dado, N. Frištacký, I. Grellneth, J. Hasan, El-Ddin Hossam Hussin, J. Hudec, K. Jelemenská, M. Kolesár, D. Kotmanová, M. Kotočová, T. Krajčovič, D. Malina, E. Tomalová, T. Török, Thu Giang Nguyen
Supported by: Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences
Duration: January 2003 – December 2005
Description: Research aim of this project are the following: creation of a novel effective formal specification tool and of a development (refinement) environment based on autonomous agents and on processes that are aimed mainly at specifications of complex digital systems (with employment of complex library elements described by "soft" or "firm" description means) mainly oriented towards microsystems implementation; 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; elaboration of new methodology for VLSI system design and testing at the functional level that is applicable to integration into ASIC and PLD design.

8.6 Publications

Journals

HASSAN, A., HUDEC, L.: Management and Verification of Firewall and Router Access Lists. In: *Computing and Informatics*. - Vol. 23, No. 1 (2004), pp. 77-100. (in English)

KOLESÁR, M.: Shortly from the history of the FEI Alumni III (2002). In: *EE – časopis pre elektrotechniku a energetiku*. (Journal for Electrical Engineering and Power Engineering) – Vol. 10, No. 6 (2004), p. 36. (in Slovak)

Conferences

BAGALA, A.: Grid Computing & Security. In: Int. Conf. and Competition of students' scientific works *STUDENT EEICT 2004:* Bratislava, May 2004. - pp. 147-150. (in English)

BALGA, A., ČIČÁK, P., SLÍŽIK, P., HLUCHÝ, L.: Hybrid SkipNet – Reducing Maintenance Overhead in a SkipNet-like Routing Structure. In: *ECI 2004*, 6th Int. Scientific Conf. Electronic Computers and Informatics: Košice-Herľany, September 2004. - pp. 235-240. (in English)

BERNÁT, D.: Synchronisation and Concurrency. In: *SOFSEM 2004*: Theory and Practice of Computer Science. Volume II.: Měřín, Czech Republic, January 2004. - pp. 211-218. (in English)

ČIČÁK, P., KOTOČOVÁ, M.: Fibre to the Home, In: *CiOS 2004*, 1st Int. Conf. on Communication in Optical Systems: Bratislava, February 2004. (in English)

ČIČÁK, P., JAKAB, F.: Using of the High Power Network Infrastructures in E-Learning. In: *CiOS 2004*, 1st Int. Conference on Communication in Optical Systems, Bratislava, February 2004. (in Slovak)

ČIČÁK, P., MOSTAFA, H..: Manifestation of PBS as a Medium-Access Communication System in Enterprise ALL-Optical Computer Networks. In: *CiOS 2004,* 1st Int. Conf. on Communication in Optical Systems, Bratislava, February 2004. (in English)

ČIČÁK, P., GRELLNETH, I., KOTOČOVÁ, M., Mesjar, P.: Contribution to the Evaluation Methodology. In: *ICETA 2004*, 3rd Int. Conf. on Emerging Telecommunications Technologies and Applications. Košice, September 2004. - pp. 515-518. (in English)

FRIŠTACKÝ, N.: A formal description of digital systems inter-module communications. In: *ECI 2004*, 6th Int. Scientific Conf. Electronic Computers and Informatics: Košice-Herľany, September 2004. - pp. 117-124. (in English)

HASSAN, A.A., HUDEC, L.: Network Security Policy Implementation in Large Companies LANs. In: *CIOS'04,* 1st Int. Conf. on Communication in Optical Systems: Bratislava, February 2004. - s. 1-12. (in English)

HUDEC, L.: Technical overview of PKI. In: *Data Security 2004*. Bratislava. AEC 2004. - pp. 40-47. (in Slovak)

KINDER, R., HUDEC, L., BLAŽÍČEK, M.: Automated Hall profiling system with a four point probe for characterization of semiconductors. In: *EDS´04*, 11th Electronic Devices and Systems Conf. 2004: Brno, Czech Republic, September 2004. - pp. 429-433. (in English)

KRAJČOVIČ, T.: EMP-Experimental Microprogrammable Processor. In: *Applied Electronics 2004*, Int. Conf.: Pilsen, September 2004. - pp. 117-120. (in English)

MOSTAFA, H., ČIČÁK, P.: Towards an Equilibrium Strategy in Wireless Mobile-IP Computer Networks. In: *ICETA 2004*, 3rd Int. Conf. on Emerging Telecommunications Technologies and Applications. Košice, September 2004. - pp. 123-129. (in English)

NEHÉZ, M., BERNÁT, D.: On Communication Protocols in Unreliable Mesh Networks and their Relation to Phase Transitions. In: Parallel and Distributed Computing Systems, *ISCA 17th Int. Conf.:* San Francisco USA, September 2004. - pp. 235-239. (in English)

TÖRÖK, T.: On HW/SW Co-Design of Embedded Systems. In: Computer Architectures and Diagnostics (*PAD 2004*), Czech and Slovak Seminar for doctoral students: Moravany nad Váhom, September 2004. - pp. 29-32. (in English)

TÖRÖK, T.: FPGA Implementation of Self-Synchronized Channel AES Encryption Suitable for ISDN. In: Int. Conf. and Competition of students' scientific works *STUDENT EEICT 2004:* Bratislava, May 2004. - pp.164-167. (in English)

Reviews in Journals

KOLESÁR, M.: (rev.): Monadic predicate formulae. /Aut: Bokr,J.- Jáneš,V. – In: *Acta Electrotechnica et Informatica* No. 4, Vol. 4, 37 –39 (2004) (in English)

8.7 Cooperation

Cooperation in Slovakia

– Institute of Informatics, Slovak Academy of Sciences, Bratislava

– Slovak University of Technology in Bratislava, Faculty of Electrical Engineering and Information Technology

– Technical University in Košice, Faculty of Electrical Engineering and Information Technology

– University of Žilina, Faculty of Management Science and Informatics

– Infostat Bratislava

– Tatra Banka Bratislava

– Compaq Computer Slovakia Ltd.

– Microsoft Slovakia Ltd.

– IBM Slovakia Ltd.

– Oracle Slovakia Ltd.

– Datalan Ltd.

- MOLPIR LTD.
- Siemens Ltd.
- Tempest Ltd.
- CISCO Systems GTEC Slovakia Ltd.

International Cooperation

- Czech University of Technology, Department of Computers, Prague, Czech Republic
- Technical University in Brno, Faculty of Information Technologies, Brno, Czech Republic
- University of West Bohemia in Plzen, Department of Computers, Pilsen, Czech Republic
- INRIA, Grenoble, France
- University of Maribor, Maribor, Slovenia
- Heinz Nixdorf Institut, Universität - GH Paderborn, Germany
- Microelectronic Systems Institute, TU Darmstadt, Germany
- Fraunhofer Institute for Integrated Circuits, Dresden, Germany

Visits of Staff Members

- *D. Bernát:*: SOFSEM 2004, Měřín, Czech Republic, January 24-30, 2004
- *L. Hudec*: 158th meeting of the Committee of Senior Officials for Scientific and Technical Research (COST), Skopje, Macedonia, February 14-18, 2004
- *P. Čičák*: Workshop CRM solution and a call centres, Prague, Czech Republic, March 3, 2004
- *P. Čičák*: Workshop Monitoring of the GSM communication networks, Paris, France, March 29 – April 2, 2004
- *L. Hudec*: COST-JAF meeting, Helsinki, Finland, May 8-11, 2004
- *N. Frištacký*: Czech Technical University, Prague, Czech Republic, July 13-14, 2004
- *I. Grellneth*: CISCO training, Birmingham, Great Britain, July 26 – August 7, 2004
- *T. Krajčovič*: Applied Electronics 2004, Pilsen, Czech Republic, September 7-10, 2004
- *M. Kolesár, P. Čičák*: Computer Science Education Workshop 2004, Trojanovice, Czech Republic, October 14-15, 2004
- *P. Čičák*: IT + Security Conference 2004, Prague, Czech Republic, November 10-11, 2004
- *K. Jelemenská, T. Török*: Czech Technical University, Prague, Czech Republic, November 3-5, 2004

8.8 Membership in Professional Organisations and Societies

Slovak Professional Organisations and Societies

Norbert Frištacký

–   Slovak Academic Society, member (member, since 1997)

–   Society for Computer Science, member (member, since 1991)

–   Society for Cybernetics and Informatics (member, since 1991)

Ladislav Hudec

–   Slovak Association for Information Security (member, since 1996; president since 1998)

–   Slovak Centre of the IEE (member, since 1996; vice-president 1996-1998)

–   Slovak Chapter of the ISACA (member, since 2002)

Milan Kolesár

–   Slovak Centre of the IEE (member, since 1997)

International Professional Organisations and Societies

Norbert Frištacký

–   Institute of Electrical and Electronic Engineers, IEEE (member, since 1991)

–   IEEE Computer Society (member, since 1991), Computer Pioneer Award (1996)

–   IFIP (Technical Committee TC-10: Computer Systems Technology member, since 1992; Working group TC10-5: Design and Engineering of Electronic Systems member, since 1993)

Ladislav Hudec

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

8.9 Other Activities

–   Computing and Informatics (CAI) – N. Frištacký: member of the Board of Editors (since 1979), member of the Board of Editors Executive Committee (since 2000)

–   DATE 2004 – Design Automation and Test in Europe (conference) – N. Frištacký: member of programme committee

–   DDECS 2004 – Diagnostics and Design of Electronic Circuits and Systems Central European Conference (sponsored by CS IEEE) – N. Frištacký member of Steering Committee, member of programme committee, general co-chair

–   ECS 2004 (Electronic Circuits and Systems) FEI STU international workshop, N. Frištacký: member of programme committee (since 1999)

–   ECI 2004 (Electronic Computer and Informatics) TU Košice, N. Frištacký: member of programme committee

–   National COST Coordinator, L. Hudec (since 1993)

–   Member of the COST Senior Officials Committee, L. Hudec (since 1993)

–   Data Security 2004 Conference, April 14, Bratislava, L. Hudec: chair of programme committee

9 Institute of Informatics and Software Engineering

E-mail: uisi@fiit.stuba.sk
Web: http://uisi.fiit.stuba.sk
Tel: +421 2 654 295 02
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 and software engineering; among the related areas, it is oriented especially to artificial intelligence in research of knowledge approaches in solving problems of informatics 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

  • graduates with the first degree will be excellently prepared for Slovak and European labour market and will be able to take care of themselves in their own business and also to create employment opportunities to others,

  • graduates with the second degree will have acquired competencies and abilities to be leaders of specialist teams with deep expert knowledge and ability of high creativity,

  • doctoral study graduates will be 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),
- Artificial Intelligence (doctoral degree).

The Institute of Informatics and Software Engineering fulfils the mission by 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.

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, Assoc. Professor

Secretary
> Viera Rozinajová, PhD.

Administrative department
> Zuzana Macková

Teaching staff
> Mária Bieliková, Assoc. Professor
> Anna Bou Ezzeddine
> Ľubica Hanulová
> Zuzana Husárová
> Ivan Kapustík
> Dagmar Komorová
> Jana Minárová, Assoc. Professor
> Ľudovít Molnár, Professor
> Pavol Návrat, Professor
> Martin Nehéz
> Ivan Polášek, PhD.
> Anna Považanová
> Viera Rozinajová, PhD.
> Valéria Šimáková

Researchers
> Gabriela Kosková
> Valentino Vranić, PhD.

External teachers

      Daniela Gregušová, Assoc. Professor
      Imrich Lenharčík
      Jozef Papula, Assoc. Professor
      Lubor Šešera, PhD.
      Jiří Šafařík, Professor

PhD students:

      Anton Andrejko
      Peter Dolog
      Roman Filkorn
      György Frivolt
      Vladimír Grlický
      Matej Košík
      Marián Lekavý
      Vladimír Marko
      Matúš Navarčik

9.2 Teaching

Undergraduate Study (Bc.)

Course	Semester	Credits	Lecturer
Algorithms and Programming	Autumn	6	J. Minárová A. Považanová
Artificial Intelligence	Spring	6	P. Návrat
Final Bachelor Project I	Autumn	6	J. Minárová
Final Bachelor Project II	Spring	6	J. Minárová
Functional and Logic Programming	Autumn	6	M. Bieliková
Fundamentals of Informatics	Spring	6	M. Nehéz
Java Programming	Spring	0	I. Lenharčík
Object Oriented Programming	Spring	6	J. Minárová
Programming Languages and Compilation	Autumn	6	Ľ. Molnár
Programming Techniques	Autumn	6	P. Návrat
Principles of Software Engineering	Spring	7	M. Bieliková
Specifications Methods and Tools	Spring	6	Ľ. Molnár

Master Study (Ing.)

Course	Semester	Credits	Lecturer
Design of Compilers	Autumn	6	Ľ. Molnár
Diploma Project I–III (Software Engineering)	Autumn Spring	35	P. Návrat
Knowledge Based Systems	Autumn	6	I. Kapustík

Course	Semester	Credits	Lecturer
Management in Software Engineering	Spring	6	M. Bieliková
Object-Oriented Analysis and Design	Autumn	5	I. Polášek
Project Management in Informatics I–II	Autumn Spring	4	M. Bieliková
Software Systems Architecture	Autumn	4	P. Návrat
Software Systems Architecture – Project	Spring	1	P. Návrat
Team Project I	Autumn	6	M. Bieliková
Team Project II	Spring	6	M. Bieliková

9.3 Theses

Bachelor (Bc.) Theses

– Richard Arpáš: *Community of agents showing simple cooperation*. May 2004.
Supervisor: I. Kapustík.

– Michal Babala: *System for dispatching student works through Internet.* May 2004.
Supervisor: A. Považanová.

– Michal Bali: *System for submitting student works by Internet*. May 2004.
Supervisor: A. Považanová.

– Peter Bednár: *Editor for the creation of algorithms – working with arrays*.
May 2004. Supervisor: Z. Husárová.

– Ivan Bernaťák: *Algorithmization in examples – abstract data types*. May 2004.
Supervisor: A. Bou Ezzeddine.

– Rastislav Bertušek: *Design program activities monitoring concepts*. May 2004.
Supervisor: M. Unger.

– Tomáš Búci: *Processing of students assignments*. May 2004.
Supervisor: Ľ. Hanulová.

– Marek Čambál: *System for managing student works via Internet.* May 2004.
Supervisor: A. Považanová.

– Martin Donoval: *XMS – eXtraordinary Message Service*. May 2004.
Supervisor: M. Bieliková.

– Miroslav Gális: *Object-oriented programming using examples*. May 2004.
Supervisor: Ľ. Hanulová.

– Ladislav Gažo: *XMS – eXtraordinary Message Service*. May 2004.
Supervisor: M. Bieliková.

– Marek Gregor: *XMS – eXtraordinary Message Service*. May 2004.
Supervisor: M. Bieliková.

– Zuzana Halanová: *Algorithms in examples – sorting.* May 2004.
Supervisor: A. Bou Ezzeddine.

– Martin Hinka: *The support of object oriented analysis and design*. May 2004.
Supervisor: J. Minárová.

- Michal Holečka: *Information retrieval in database*. May 2004.
  Supervisor: V. Šimáková.

- Martin Chalány: *Personal data in information systems*. May 2004.
  Supervisor: P. Návrat.

- Vojtech Imrecze: *Software as a result of creative mental technical activity*.
  May 2004. Supervisor: P. Návrat.

- Michal Jakubík: *Virtual University – discussion forums*. May 2004.
  Supervisor: V. Šimáková.

- Andrej Janžo: *Perl and object oriented programming*. May 2004.
  Supervisor: A. Považanová.

- Michal Kelemen: *Real-time monitoring cars*. May 2004. Supervisor: J. Švingál.

- Vladimír Krivuš: *Object-oriented programming using examples*. May 2004.
  Supervisor: Ľ. Hanulová.

- Ľuboš Lečko: *Random access machine simulator*. May 2004.
  Supervisor: M. Nehéz.

- Ľudovít Lučenič: *Diagnostic evaluation of CT scans*. May 2004.
  Supervisor: V. Šimáková.

- Ľubomír Majtás: *Presentation of documents for Semantic Web*. May 2004.
  Supervisor: R. Filkorn.

- Jakub Mažgut: *An assistant for reading the internet newspapers*. May 2004.
  Supervisor: G. Polčicová.

- Ondrej Mikita: *Creating the design patterns – templates*. May 2004.
  Supervisor: J. Minárová.

- Tomáš Molnár: *Algorithms in examples – sorting*. May 2004.
  Supervisor: A. Bou Ezzeddine.

- Peter Nagy: *Adaptive presentation of information about university courses*.
  May 2004. Supervisor: M. Bieliková.

- Emil Náhlik: *CT images and using CT images for diagnostics of patients*.
  May 2004. Supervisor: V. Šimáková.

- Martin Niejadlik: *Sharing and accessing of documents*. May 2004.
  Supervisor: G. Polčicová.

- Štefan Novák: *Learning objects DB for courses of virtual university*. May 2004.
  Supervisor: V. Šimáková.

- Juraj Obert: *XMS – eXtraordinary Message Service*. May 2004.
  Supervisor: M. Bieliková.

- Juraj Pavlovič: *System for collecting students projects by means of Internet*.
  May 2004. Supervisor: A. Považanová.

- Martin Pozor: *System for generating fractals*. May 2004. Supervisor: O. Smutný.

- Miroslav Rusnák: *Agents community with simple kind of communication*.
  May 2004. Supervisor: I. Kapustík.

- Peter Ružička: *The educational support of the object oriented programming*. May 2004. Supervisor: O. Smutný.

- Rastislav Solín: *Mobile agents*. May 2004. Supervisor: I. Kapustík.

- Peter Šimún: *Support for technology selection for text document processing*. May 2004. Supervisor: R. Filkorn.

- Miloslav Šípka: *Making formal specification in Z language*. May 2004. Supervisor: D. Komorová.

- Ján Šnirc: *Searching and navigation in space of final projects*. May 2004. Supervisor: R. Filkorn.

- Martin Šoltis: *Algorithms in examples – searching*. May 2004. Supervisor: A. Bou Ezzeddine.

- Marián Tínes: *System for generating fractals*. May 2004. Supervisor: O. Smutný.

- Peter Trnovský: *Probabilistic models for recommendation*. May 2004. Supervisor: G. Polčicová.

- Michal Tury: *Software as result of technical creative mentation*. May 2004. Supervisor: P. Návrat.

- Dušan Velický: *New design for www.rubriky.net*. May 2004. Supervisor: V. Šimáková.

- Miroslav Vnuk: *Refactoring decayed code*. May 2004. Supervisor: P. Návrat.

- Dalibor Zahorák: *Documents sharing and retrieval*. May 2004. Supervisor: G. Polčicová.

- Jaroslav Zajac: *Support of object-oriented design*. May 2004. Supervisor: J. Minárová.

Master (Ing.) Theses

- Michal Bielik: *Support for Specification Methods and Tools course lessons*. May 2004. Supervisor: D. Komorová.

- Peter Blšták: *Specification of web application physical design in CASE and IS mapping to an implementation environment*. May 2004. Supervisor: J. Červeň.

- Róbert Hritz: *Agent working with ontologies*. May 2004. Supervisor: R. Filkorn.

- Jaroslav Jakubík: *Design patterns in software development*. December 2004. Supervisor: J. Minárová.

- Pavol Kiša.: *Semantic similarity of the words and its utilization by document recommendation*. May 2004. Supervisor: G. Polčicová.

- Jozef Krššák: *Graphical development environment for multi-agent simulation system*. May 2004. Supervisor: V. Šimáková.

- Gabriel Pap: *Design and implementation of 3D graphics accelerator benchmark*. May 2004. Supervisor: O. Smutný.

- Miroslav Rusnák: *Recognition of digital curves*. December 2004. Supervisor: A. Považanová.

- Ivan Sás: *Unsupervised clustering of documents using probability models.* December 2004. Supervisor: G. Polčicová.

- Jozef Sebestyén: *Cooperation of agents in robotic football.* May 2004. Supervisor: I. Kapustík.

- Martin Ševčík: *Abilities of the simulated robotic hockey player.* May 2004. Supervisor: I. Kapustík.

Doctoral (PhD.) Theses

Student name: Tomáš Seidmann
Degree program: Applied Informatics
Thesis title: Distributed Shared Memory in Modern Operating Systems
Supervisor: Jiří Šafařík, Professor
Defended on: September 3, 2004
Annotation: In the dissertation we focus on the topic of distributed shared memory (DSM) in modern operating systems. We take into consideration new operating systems, usually based on the microkernel architecture, as well as existing industry-standard operating systems and their middleware services. Concerning DSM, we try to figure out its desired capabilities and attributes in order to be able to build medium- to large-scale distributed applications. The results of the dissertation can be summarized as follows: (1) We have designed a microkernel for distributed operating systems with DSM as its key communication abstraction; (2) We have designed a tool for exploring and evaluating networked systems on a single host by making modifications to the kernel of an existing operating system and introducing the concept of virtual hosts; (3) We have designed a memory coherence protocol offering causally consistent DSM using IP multicast for coherence traffic; (4) We have developed an application of the designed coherence protocol by building a DSM using the .NET Framework.

Student name: Valentino Vranić
Degree program: Program and Information Systems
Thesis title: Multi-Paradigm Design with Feature Modeling
Supervisor: Mária Bieliková, Assoc. Professor
Defended on: September 3, 2004
Annotation: Based on the analysis of multi-paradigm software development and the concept of paradigm, a new method of multi-paradigm design with feature modeling is proposed in this thesis. The method enables an explicit reasoning about paradigms viewed as solution domain concepts, and their appropriateness for given application domain concepts. Both the application and solution domain are modeled using a conceptual modeling technique known as feature modeling adapted to the needs of multi-paradigm design. The process of paradigm selection is defined also in terms of feature modeling as a bottom-up paradigm instantiation over application domain concepts. Its output is a set of paradigm instances annotated with the information about corresponding application domain concepts and features. According to these

paradigm instances, the code skeleton is being designed. The method is demonstrated and evaluated on the solution domain of AspectJ programming language and the application domain of feature modeling.

9.4 Research Laboratories

Intelligent Systems Laboratory

Head:	P. Návrat
Contact:	`pavol.navrat@fiit.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

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

9.5 Research projects

Collaborative Accessing, Analysis and Presentation of Documents in Internet Environment using Modern Software Tools (VEGA 1/0162/03)

Project leader:	P. Návrat
Members:	M. Bieliková, A. Bou Ezzedine, R. Filkorn, V. Grlický, I. Kapustík, J. Kuruc, M. Markošová, V. Marko, Ľ. Molnár, M. Navarčík, M. Nehéz, G. Kosková, V. Vranić
Supported by:	Scientific Grant Agency of the Ministry of Education of Slovak Republic and the Slovak Academy of Sciences

Duration: January 2003 – December 2005

Description: The focus of the project is on methods for intelligent information retrieval, categorisation and recommendations for using linguistic analysis, semantics of words and collaborative filtering. Valuable information can be obtained by nonlinear data analysis, such as multifractal scaling or data mining. We investigate new methods and techniques for development of application domain models, navigation models and content presentation models. The information about a user, his preferences, knowledge, goals and pattern of work together with the knowledge of environment is considered. Operation and usage of documents within the internet environment require an improvement in the area of modern software methods and tool, which are employed for their implementation. Modern trends of software components systemisation and their reuse will be enriched by design patterns. A new quality is expected incorporating a modified version of collaborative software agents.

Learning Programming using Adaptive Hypermedia System on the Internet (KEGA 3/2069/04)

Project leader: M. Bieliková

Members: R. Filkorn, I. Kapustík, J. Kuruc, J. Minárová, P. Návrat, M. Nehéz, G. Kosková, A. Považanová

Supported by: Cultural and Educational Grant Agency of the Ministry of Education of Slovak Republic

Duration: September 2004 – December 2006

Description: The aim of the project is to improve e-learning methods and tools using adaptive web-based hypermedia. Our work is directed towards learning programming. We concentrate on design of architecture of adaptive educational web-based system together with techniques for adaptation of educational content presentation (e.g. level of detail presented to a student), adaptation of the layout and adaptive navigation. As a main source of adaptation we consider a student with various characteristics related to learning (e.g., level of knowledge, preferences, previous work with the system). We expect devising new methods and techniques for learning programming using Internet and development of adaptive web-based system for learning programming using several programming paradigms.

Support Young Research Workers Education with the Aim to Bring up Inventive Experts – Informatics Professionals – for Modern Society Based on Knowledge (JPD 3 2004/1-022, project code 13120200021)

Project leader: M. Bieliková

Members: Ľ. Molnár, P. Návrat, M. Šperka

Supported by: European Social Fund

Duration: December 2004 – December 2006

Description: The project is oriented towards a support of education of young researchers – PhD students. The value is in creating study materials for new PhD degree programmes realized at the Faculty of Informatics

and Information Technologies, especially in software engineering. The project also includes financial support of PhD students in order to increase the number of young research workers with highest qualification.

Tools for Acquisition, Organisation, and Maintenance of Knowledge in an Environment of Heterogeneous Information Resources

Project leader: STU, P. Návrat
Members: UPJŠ Košice, UI SAV Bratislava, Softec s.r.o. Bratislava
Supported by: state programme of research and development "Establishing of Information Society"
Duration: September 2004 – November 2007
Description: The subject of the project is the basic and applied research aimed at the work with knowledge in an environment of heterogeneous information resources. Internet and its services serve as an appropriate environment for the research of new approaches to acquisition, organisation, verification, evaluation, and maintenance of knowledge timeliness. Experiments will be performed also in an intranet environment. The objective is to explore the models needed to work with knowledge – the information content model, the user and context model – and to explore knowledge discovery methods with the use of ontologies. The project results are twofold: the main part represents the basic research results in the domain of knowledge life cycle support in an environment of heterogeneous resources, while the other is the result application in the development of tools and pilot systems aimed at work with knowledge.

European Computing Education and Training (213871-CP-1-2001-1-BG-ERASMUS-TN)

Project leader: STU, P. Návrat
Contractor: A. Smrikarov, Angel Kunchev University of Rousse, Bulgaria
Countries: AT, BE, CY, CZ, DE, DK, EE, ES, FI, FR, GR, HU, IE, IS, IT, LI, LT, LV, MT, NL, NO, PL, PT, RO, SE, SI, UK
Supported by: Socrates programme of the European Commission
Duration: October 2001 – September 2004
Description: Building of a User-Friendly Information Society (IST) which started at the end of the last century and which will be a major task at the beginning of the new century, sets extremely high requirements before the builders of this society, the specialists in computing. That is why the main goal of the project is, through the creation of a Thematic Network – European Computing Education and Training (ECET), to join the efforts of related departments, companies and associations and, on this particular basis, to improve considerably quality of training of specialists in Computing. One of the main objectives of this project is, by using the most up-to-date information and communication technologies, to establish a Virtual European Department of Computing (VEDoC), aiming at the achievement of a European Dimension in Higher Computing Education and Training.

Doctoral Education in Computing (ERASMUS – Thematic Network Project 114046-CP-1-2004-1-BG-ERASMUS-TN)

Project leader:	STU, P. Návrat
Contractor:	A. Smrikarov, Angel Kunchev University of Rousse, Bulgaria
Countries:	AT, BE, CZ, CY, DK, DE, EE, FI, GR, ES, FR, HU, IE, IS, IT, LU, LV, LT, MT, NL, NO, PL, PT, RO, SE, UK
Supported by:	Socrates programme of the European Commission,
Duration:	October 2004 – September 2007
Description:	The general objectives of the network are to establish the principles of effective, high quality, Europe-valid doctoral studies and to develop the tools for doing this through analysis of the existing systems, exchanging experience and disseminating good practices among all partners. Using the most up-to-date information and communication technologies and the experience gained from the Virtual European Department of Computing (VEDoC), to help acknowledge doctoral studies as an important "third" cycle of education aiming at the achievement of European Dimension in Higher Computing Education and Training.

9.6 Publications

Journals

NÁVRAT, P., MANOLOPOULOS, Y., VOSSEN G. (Guest editors of journal special issue): Special Issue: ADBIS 2002: Advances in Database and Information Systems. In: *Information Systems.* – Vol. 29, Issue 6, (2004) – ISSN 0306-4379. (in English)

MOLNÁR, Ľ., NÁVRAT, P.: A new impulse to informatics. In: *Profit.* – No. 1-2 (2004), p. 42. (in Slovak)

NÁVRAT, P.: Universities would benefit from the truth about their level. Interview. In: *Trend.* – No. 8, April (2004), pp. 22-25 (in Slovak)

NÁVRAT, P., MANOLOPOULOS, Y., VOSSEN, G.: Special issue on ADBIS 2002: advances in databases and information systems. In: *Information Systems.* – Vol. 29, (2004), pp. 437-438. (in English)

POLČICOVÁ, G., TIŇO, P.: Making sense of sparse rating data in collaborative filtering via topographic organisation of user preference patterns. In: *Neural Networks,* Elsevier, Vol. 17, (2004), pp. 1183-1199. (in English)

Conferences

ÁGH, P., BIELIKOVÁ, M.: Considering Human Memory Aspects to Adapting in Educational Hypermedia. In: Workshop on Individual Differences, *AH 2004*: 3rd Int. Conf. on Adaptive Hypermedia and Adaptive Web-Based Systems: Eindhoven, The Netherlands, August 2004. - pp.107-114. (In English)

BIELIKOVÁ, M., NORIS, I.: A Model of Versioned Web Sites. In: *SOFSEM 2004*: Theory and Practice of Computer Science, 30th Conf. on Current Trends in Theory and Practice of Computer Science. Měřín, Czech Republic, January 2004. - pp.151-162. (in English)

BIELIKOVÁ, M.: Agile Software Development. In: *SOFTECON 2004*, Conference on trends in modern information technologies, Bratislava, February 2004 - 40 p. (in Slovak)

BIELIKOVÁ, M., KURUC, J.: Authoring Adaptive Educational Hypermedia. In: *Technologies for e-learning 2004*: Prague, Czech Republic, June 2004. – pp.11-21. (in Slovak)

BIELIKOVÁ, M., KURUC, J., MARKO, V.: Entry into Virtual University Space through Web-Based e-Application.. In: *ICETA 2004*, 3rd Int. Conf. on Emerging Telecommunications Technologies and Applications: Košice, Elfa, September 2004. - pp. 403-410. (in English)

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BIELIKOVÁ, M., HABALA, R.: Time-Based Extensions to Adaptation Techniques. In: Adaptive Hypermedia and Adaptive Web-Based Systems. 3rd Int. Conf. *AH 2004*: Eindhoven, The Netherlands, August 2004. - pp. 376-379. (in English)

BLŠTÁK, P.: Specification of physical design of web applications in CASE tool and its mapping into implementation environment. In: *ACM Student 2004 Finals*, Prague, Czech Republic, November 2004. - 8 p. (in Slovak)

FILKORN, R., NÁVRAT, P.: Modeling Optimization Components for XML Processing. In: *ISIM 2004*, 7th Int. Conf. Information Systems Implementation and Modelling, Rožňov p. Radhoštěm, Czech Republic, April 2004, - pp. 69-76. (in English)

FILKORN, R.: On Design Pattern Combinations for Hierarchical Object Structures. In: Int. Conf. and Competition of students' scientific works *STUDENT EEICT 2004*, Bratislava, May 2004. - pp. 143-146. (in English)

GAŽO, L., DONOVAL, M., GREGOR, M., OBERT, J.: Extraordinary Message Service. In: *ACM Student 2004 Finals*, Prague, Czech Republic, November 2004. M. Bieliková (supervisor) – 8 p. (in English)

GRLICKÝ, V.: Information Integration from Disparate Web Sources. In: *ISIM 2004*, 7th Int. Conf. Information Systems Implementation and Modelling: Rožňov p. Radhoštěm, Czech Republic, April 2004. - pp. 77-84. (in English)

GRLICKÝ, V.: Two-level Multistrategy Approach to Web Data Integration. In: Int. Conf. and Competition of students' scientific works *STUDENT EEICT 2004*: Bratislava, May 2004. - pp. 127-130. (in English)

KURUC, J., DOLOG, P., BIELIKOVÁ, M.: Prototyping Navigation in Web-Based Information Systems Using WebML. In: *DATAKON 2004:* Brno, Czech Republic, October 2004. - pp. 253-262. (in English)

KURUC, J: Behavioral Aspects of WebML Hypertext Model. In: Int. Conf. and Competition of students' scientific works *STUDENT EEICT 2004:* Bratislava, May 2004. - 131-134. (in English)

MARKO, V.: Supporting Design Pattern Instantiation in Software Design. In: *ISIM 2004*, 7th Int. Conf. Information Systems Implementation and Modelling: Rožnov p. Radhoštěm, Czech Republic, April 2004. - pp. 85-92. (in English)

MARKO, V.: Role Based Design Pattern Modeling for Interactive Instantiation. In: Int. Conf. and Competition of students' scientific works *STUDENT EEICT 2004:* Bratislava, May 2004. - pp. 139-142. (in English)

MARKO, V.: Template Based, Designer Driven Design Pattern Instantiation Support. In: *ADBIS 2004*, Advances in Databases and Information Systems. 8th East European Conf.: Budapest, Hungary, September 2004. - pp. 144-158. (in English)

MOLNÁR, Ľ.: Unlimited Learning and Its Quality. In: *ICETA 2004*, 3rd Int. Conf. on Emerging Telecommunications Technologies and Applications: Košice, September 2004. - pp. 41-44. (in English)

NAVARČÍK, M.: Mathematical model of history. In: *ISIM 2004*, 7th Int. Conf. Information Systems Implementation and Modelling: Rožnov p. Radhoštěm, Czech Republic, April 2004. - pp. 119-126. (in English)

NAVARČÍK, M.: Mathematical Explanation of Chosen Analysis Patterns. In: Int. Conf. and Competition of students' scientific works *STUDENT EEICT 2004:* Bratislava, May 2004. - pp. 135-138. (in English)

NEHÉZ, M., BERNÁT, D.: On Communication Protocols in Unreliable Mesh Networks and their Relation to Phase Transitions. In: Parallel and Distributed Computing Systems, *ISCA 17th Int. Conf.:* San Francisco, USA, September 2004. - pp. 235-239. (in English)

NEHÉZ, M.: Interval Routing in Random Graphs, In: 2nd *COMSTRU Workshop 2004:* Venice, Italy, September 2004, - p.6. (in English)

NEHÉZ, M.: On Subgraphs with Compactness 1 in Random Meshes. In: *Aplimat*, 3rd Int. Conf.: Bratislava, February 2004. - pp. 729-734. (in English)

POLČICOVÁ, G., TIŇO, P.: Introducing a Star Topology into Latent Class Models for Collaborative Filtering. In: Artificial Intelligence Applications and Innovations. *IFIP 18th World Computer Congress:* Toulouse, France, August 2004. - pp. 293-303. (in English)

VRANIĆ, V.: Reconciling Feature Modeling: A Feature Modeling Metamodel. In: Proc. of 5th Annual Int. Conf. on Object-Oriented and Internet-Based Technologies, Concepts, and Applications for a Networked World, *Net.ObjectDays 2004*, Erfurt, Germany, September 2004. - pp. 122-137. (in English)

Reviews in Journals

BIELIKOVÁ, M.(rev.): Task-role-based access control model. /Aut: Oh, Sejong, Park, Seog. Information Systems Vol.28, 6, (2003), pp. 533-562. – In: *ACM Computing Reviews*. – Vol. 45, No.6, 383 (2004) (in English)

BIELIKOVÁ, M. (rev.): Sebesta, R.W.: Programming the World Wide Web. /Aut: Sebesta , R.W. Boston: Addison Wesley Longman Publ. Co., Inc., 2002. 608 pp. – In: *ACM Computing Reviews* – Vol. 45, No.4, 208-209 (2004) (in English)

BIELIKOVÁ, M. (rev.): Managing Software for Growth: without fear, control, and the manufacturing mindset./Aut: Miller R. Boston: Addison Wesley Longman Publ. Co, Inc., 2003. – In: *ACM Computing Reviews* – Vol. 45, No. 9., 535-536 (2004) (in English)

BIELIKOVÁ, M. (rev.): A Guide to software configuration management. /Aut: Leon, A. Norwood, MA: Artech House, Inc., 2000. – In: *ACM Computing Reviews* – Vol. 45, No. 11, (2004) (in English)

NÁVRAT, P. (rev.): Knowledge-based information retrieval and filtering from the Web (The Kluwer International Series in Engineering and Computer Science, SECS 746) /Aut: Abramowicz W.: Kluwer Academic Publishers, Norwell, MA 2003. – In: *ACM Computing Reviews* – on line (2004) (in English)

NÁVRAT, P. (rev.): Data structures and abstractions with Java. /Aut: Carrano F., Savitch, W. Pearson Education, Upper Saddle River, NJ, 2002, 864 pp. In: *ACM Computing Reviews* – on line (2004) (in English)

NÁVRAT, P. (rev.): Algorithm design: foundations, analysis and internet examples. /Aut: Goodrich, M.T., Tamassia, R., John Wiley & Sons, 2001. In: ACM SIGACT News, 35(2):14-16, 2004. (in English)

Books

VAN EMDE BOAS, P., POKORNÝ, J., BIELIKOVÁ, M., ŠTULLER, J.: /eds./: *Theory and Practice of Computer Science*. 30th Conf. on Current Trends in Theory and Practice of Computer Science. SOFSEM 2004, Měřín, Czech Republic, January 24-30, 2004 : proceedings. – Berlin; Heidelberg : Springer, 2004. - 384 p. (Lecture Notes in Computer Science; 2932). – ISBN 3-540-20779-1

VAN EMDE BOAS, P., POKORNÝ, J., BIELIKOVÁ, M., ŠTULLER, J.: /eds./: *Theory and Practice of Computer Science*. 30th Conf. on Current Trends in Theory and Practice of Computer Science. SOFSEM 2004, Měřín, Czech Republic, January 24-30, 2004 : proceedings Vol.II. – Prague: Matfyzpress, 2004. - 263 p. – ISBN 80-86732-19-3

HUBA, M., BIELIKOVÁ, M., BISTÁK, P., KOMÁRIK, E., MIRONOVOVÁ, E., ROVANOVÁ, Ľ., ŽÁKOVÁ, K.: *Team Work through Internet*. - Bratislava: Vydavateľstvo STU, 2004. - 1.ed. 148 p. ISBN 80-227-2119-0. (in Slovak)

MANNOVÁ, B., ŠALOUN, P., BIELIKOVÁ, M. /eds/: *Technologies for E-learning*. – Prague, Czech Republic: ČVUT, 2004. - ISBN 81-01-03167-5. (in Czech)

9.7 Cooperation

Cooperation in Slovakia

–   Institute of Informatics, Slovak Academy of Sciences, Bratislava

–   Technical University Košice

–   University of Žilina, Faculty of Management Science and Informatics, Žilina

–   Slovak Telecom

–   Tatrabanka Bratislava

- Hewlett-Packard Slovakia Ltd.
- IBM Slovakia Ltd.
- Microsoft Slovakia Ltd.
- Oracle Slovakia Ltd.
- Ditec Ltd.
- Datalan Ltd.
- Siemens Ltd.

International Cooperation

- Department of Computers, Czech Technical University, Prague, Czech Republic
- Institute of Information Systems, Faculty of Information Technologies, Technical University, Brno, Czech Republic
- Institute of Intelligent Systems, Faculty of Information Technologies, Technical University, Brno, Czech Republic
- Department of Computers, University of West Bohemia, Pilsen, Czech Republic
- Department of Computer Science, Technical University of Ostrava, Czech Republic
- Faculty of Informatics, Masaryk University, Brno, Czech Republic
- UNESCO - Division of Information and Informatics, Paris, France
- INRIA, Grenoble, France
- University of Maribor, Slovenia
- Aristotle University, Thessaloniki, 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
- LaBRI, University of Bordeaux 1, France

Visits of Staff Members

- *M. Bieliková:* SOFSEM 2004, Měřín, Czech Republic, January 24-30, 2004
- *Ľ. Molnár*: Microsoft Higher Education Leaders Symposium, Redmond, WA, USA, January 31 - February 7, 2004
- *M. Bieliková*: Faculty of Informatics, Masaryk University Brno, Czech Republic, February 25, 2004
- *P. Návrat:* INQAAE workshop 2004, Muscat, Oman, March 20-25, 2004
- *M. Bieliková:* Informatics Colloqium, Faculty of Informatics, Masaryk University Brno, Czech Republic, April 13, 2004
- *I. Kapustík:* CEGIS MDB workshop, Prague, Czech Republic, April 15-17, 2004
- *Ľ. Molnár*: 169th session of the Executive Board, UNESCO, Paris, France, April 15-29, 2004

- *R. Filkorn, V. Grlický, V. Marko, M. Navarčík:* ISIM'04, Rožnov p. Radhoštěm, Czech Republic, April 18-21, 2004

- *Ľ. Molnár*: UNESCO IFAP, Paris, France, May 4-6, 2004

- *M. Nehéz:* Université Bordeaux, France, May 17 - July 15, 2004

- *M. Bieliková:* Faculty of Informatics, Masaryk University Brno, Czech Republic, May 20, 2004

- *P. Návrat:* 5th Annual ENQA General Assembly, Stockholm, Sweden, June 3-4, 2004

- *M. Bieliková:* Technologies for e-learning, Prague, Czech Republic, June 13-14, 2004

- *Ľ. Molnár*: Meeting of the National Commissions for UNESCO of the Europe and North America, Zurich, Switzerland, June 19-22, 2004

- *M. Bieliková:* Adaptive Hypermedia 2004, Eindhoven, The Netherlands, August 22-27, 2004

- *P. Návrat, G. Kosková:* IFIP World Computer Congress, Toulouse, France, August 22-27, 2004

- *P. Návrat:* E-Learning Conference, Brussels, Belgium, September 5-9, 2004

- *M. Nehéz:* PDCS 2004, San Francisco, USA, September 14-19, 2004

- *P. Návrat:* Steering Committee for Higher Education and Research (CDESR) Council of Europe, Strasbourg, France, September 20-22, 2004

- *P. Návrat, V. Grlický, V. Marko:* ADBIS 2004, Budapest, Hungary, September 22-25, 2004

- *V. Vranić:* Net.Object Days 2004, Erfurt, Germany, September 27 – October 2, 2004

- *Ľ. Molnár*: 170th session of the Executive Board, UNESCO, Paris, France, September 28 - October 14, 2004

- *M. Bieliková, P. Návrat:* Computer Science Education Workshop (CSEW'04), Trojanovice, Czech Republic, October 14-15, 2004

- *M. Bieliková:* RTN meeting, Prague, Czech Republic, October 15-16, 2004

- *Ľ. Molnár*: UNESCO IFAP, Paris, France, October 18-20, 2004

- *M. Bieliková*: Datakon 2004, Brno, Czech Republic, October 23-26, 2004

- *Ľ. Molnár*: HLC Sub Committee for Higher Education, SOCRATES, Brussels, Belgium, October 29, 2004

- *P. Návrat:* ENQA (General Assembly), Frankfurt, Germany, November 11, 2004

- *R. Filkorn:* Microsoft, Prague, Czech Republic, November 16–19, 2004

- *M. Nehéz:* The 2004 ACM Central Europe Programming Contest, Budapest, Hungary, November 19-22, 2004

- *M. Bieliková*: CZ ACM Student 2004, Prague, Czech Republic, November 26-27, 2004

– *M. Bieliková, P. Návrat*: Faculty of Information Technologies, VUT Brno, Czech Republic, December 1, 2004

– *P. Návrat:* Ministry of Education, Physical Education and Sports, Prague, Czech Republic, December 6, 2004

9.8 Membership in Professional Organisations and Societies

Slovak Professional Organisations and Societies

Mária Bieliková

– Slovak Artificial Intelligence Association (member, since 2000)

– Slovak Centre of the IEE (member, since 1998)

– Slovak Society for Computer Science (member, since 1998; member of the executive committee, since 2000)

Ľudovít Molnár

– Informatics Working Group of the Accreditation Commission of Slovakia (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

– Accreditation Commission of Slovakia (member, since 1999; chair, since 2002)

– Informatics Working Group of the Accreditation Commission of Slovakia (member, since 1999)

– 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 IEE (member, since 1996; chair, since 1997)

– Slovak Society for Computer Science (member, since 1992)

Martin Nehéz

– Slovak Society for Computer Science (member, since 1998)

Valentino Vranić

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

International Professional Organisations and Societies

Mária Bieliková

– Institute of Electrical and Electronic Engineers (member, since 1998; senior member since 2003)

– IEEE Computer Society (member, since 1997)

– Institution of Electrical Engineers (member, since 1998)

- Engineering Council, UK (registered Chartered Engineer, since 1998)

- Association for Computing Machinery (member, since 1998)

- SOFSEM – Annual Conference on Current Trends in Theory and Practice of Informatics Series, standing Steering Committee (member, since 2002)

- DATAKON – Annual Conference on the Current Trends in Databases and Information Systems Series, standing Steering Committee (member, since 2003)

Pavol Návrat
- American Association for Artificial Intelligence (member, since 1993)

- Association for Advancement of Computers in Education (member, since 1998)

- Institute of Electrical and Electronic Engineers (member, since 1996; senior member, since 1998)

- IEEE Computer Society (member, since 1996)

- Association for Computing Machinery (member, since 1998)

- International Federation for Data Processing (IFIP) (member of Technical Committee TC12 – Artificial Intelligence, since 1998)

- Institution of Electrical Engineers (member, since 1998; fellow, since 1998)

- Engineering Council, UK (registered Chartered Engineer, since 1998)

- Joint Conference on Knowledge-Based Software Engineering Series, standing Steering Committee (member, since 1998)

- Advances in Databases and Information Systems Conference Series, standing Steering Committee (member, since 1998)

Ľudovít Molnár
- Institute of Electrical and Electronic Engineers (member, since 1991)

- ACM (member, since 1991)

- International Federation for Data Processing (IFIP) (member of Technical Committee TC2 – Software: Theory and Practice, since 1995)

- 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)

9.9 Other Activities

- ACM International Collegiate Programming Contest 2004 – participation of a student team in Central European Regional Contest in Budapest, Hungary (M. Nehéz: team coach)
  `http://www.fiit.stuba.sk/acm`

- ACM CZ Student 2004, Prague, Czech Republic – participation of 2 student projects (M. Bieliková, J. Červeň: supervisors), finals, Prague, Czech republic (2nd place)

- IEEE Computer Society International Design Competition (CSIDC 2004) – participation of a student team (M. Bieliková: mentor)
  `http://www.fiit.stuba.sk/csidc`

- ProFIIT – Programming Competition for Secondary School Students (G. Kosková: director)
  `http://www.fiit.stuba.sk/ProFIIT/`

- RoboCup, Soccer Simulation League, Regional Tournament in Bratislava, May 25, 2004 – I. Kapustík: event director, M. Lekavý: event organiser
  `http://www.fiit.stuba.sk/robocup/`

- Computing and Informatics (CAI) – P. Návrat: member of the editorial board

- Journal of Applied Mathematics and Computing (JAMC), ISSN 1598-5865 – M. Bieliková: member of the editorial board

- Bulletin of the Slovak Society for Computer Science – M. Bieliková: member of the editorial board

- ACM CZ Student 2004 – M. Bieliková: member of steering committee

- SOFSEM 2004 – 30th Annual Conference on Current Trends in Theory and Practice of Informatics, January 25–29, 2004, Měřín, Czech Republic – M. Bieliková: member of steering committee, member of programme committee

- ISIM 2004 – 7th Int. Conf. on Information Systems Implementation and Modelling, April 19–22, 2004, Rožnov pod Radhoštem, Czech Republic – M. Bieliková, P. Návrat: members of programme committee

- ZNALOSTI 2004, February 25–27, 2004, Brno, Czech Republic – M. Bieliková, P. Návrat: members of programme committee

- ITAT 2004 – Workshop on Information Technologies - Applications and Theory. September 15-19, 2004. Vysoké Tatry – M. Bieliková: member of programme committee

- DATAKON 2004 – Annual Conference on the Current Trends in Databases and Information Systems, October 23–26, 2004, Brno, Czech Republic – M. Bieliková: member of steering committee, member of programme committee

- Technologies for E-Learning 2004. Prague, Czech Republic, June 14, 2004 – M. Bieliková: member of programme committee

- ISD 2004 – 13th Int. Conf. on Information Systems Development, September 9-11, 2004, Vilnius, Lithuania – P. Návrat: member of programme committee

- SAC 2004 – 19th ACM Symposium on Applied Computing Special Track on Database Theory, Technology, and Applications, March 14-17, 2004, Nicosia, Cyprus – P. Návrat: member of programme committee

- ADBIS 2004 – 8th East-European Conf. on Advances in Databases and Information Systems, September 22-25, 2004, Budapest, Hungary – P. Návrat: member of programme committee

- JCKBSE 2004 – 6th Joint Conference on Knowledge-Based Software Engineering, August 25-27, 2004, Protvino, Russia – P. Návrat: member of programme committee

- AIAI 2004 – First IFIP Int. Conf. on Artificial Intelligence Applications and Innovations August 22-27, 2004, Toulouse, France, Part of the IFIP World Computer Congress – P. Návrat: member of programme committee

- CiOS 2004 – Communications in Optical Systems, Conf. with Int. Participation, February 3-4, 2004, Bratislava, Slovakia – Ľ. Molnár, P. Návrat: members of programme committee

- ITAPA 2004 – Information Technologies and Public Administration, Int. Congress, October 19-20, 2004, Bratislava, Slovakia – Ľ. Molnár: member of programme committee

- Co-organisation of Technologies for E-Learning 2004, Prague, Czech Republic, June 14, 2004

10   Events Photo Gallery

11 FIIT Personnel

BELAJOVÁ, Lenka	Deanship – Study Affairs
BERNÁT, Dušan	Institute of Computer Systems and Networks
BIELEKOVÁ, Alexandra, Ing.	Head of Administrative Department
BIELIKOVÁ, Mária, doc. Ing. PhD.	Institute of Informatics and Software Engineering
BOU EZZEDDINE, Anna, RNDr.	Institute of Informatics and Software Engineering
BREZNENOVÁ, Soňa	Deanship – Personal Resources
BÁTORYOVÁ, Magda	Registry
CSONKOVÁ, Monika, Mgr.	Deanship – Research
ČERŇANSKÝ, Michal, Ing.	Institute of Applied Informatics
ČIČÁK, Pavel, doc. Ing. PhD.	Institute of Computer Systems and Networks
DADO, Boris, Ing.	Institute of Computer Systems and Networks
FRIŠTACKÝ, Norbert, prof. Ing. PhD.	Institute of Computer Systems and Networks
FÜZY, Libor	Centre of Information and Library Services
GALBAVÝ, Miroslav, Ing.	Institute of Applied Informatics
GRAMATOVÁ, Elena, RNDr., PhD.	Institute of Computer Systems and Networks
GRELLNETH, Igor, Ing. PhD.	Institute of Computer Systems and Networks
HABAJOVÁ, Eva	Deanship – Economics
HANULOVÁ, Ľubica, prom. mat.	Institute of Informatics and Software Engineering
HASAN, Jamal, Ing. PhD.	Institute of Computer Systems and Networks
HORVÁTH, Pavol, prof. Ing., PhD.	Institute of Computer Systems and Networks
HRICOVÁ, Mária	Deanship – Research
HUDEC, Ladislav, doc. Ing. PhD.	Institute of Computer Systems and Networks
HUDEC, Ján, Ing.	Institute of Computer Systems and Networks
HUSÁROVÁ, Zuzana, prom. mat.	Institute of Informatics and Software Engineering
HUSKOVÁ, Ľubica	Deanship – Study Affairs
JELEMENSKÁ, Katarína, Ing. PhD.	Institute of Computer Systems and Networks
KAPUSTÍK, Ivan, Ing.	Institute of Informatics and Software Engineering
KOLESÁR, Milan, prof. Ing. PhD.	Institute of Computer Systems and Networks
KOMOROVÁ, Dagmar, prom. mat.	Institute of Informatics and Software Engineering
KORDOŠOVÁ, Silvia	Deanship – Secretariat

KOSKOVÁ, Gabriela, Mgr.   Institute of Informatics and Software Engineering
(maiden name Polčicová)
KOTMANOVÁ, Daniela, Ing.   Institute of Computer Systems and Networks
KOTOČOVÁ, Margaréta, doc. Ing. PhD.   Institute of Computer Systems and Networks
KRAJČOVIČ, Tibor, doc. Ing. PhD.   Institute of Computer Systems and Networks
KVASNIČKA, Vladimír, prof. Ing. DrSc.   Institute of Applied Informatics
LENHARČÍK, Imrich, Ing.   Institute of Informatics and Software Engineering
MACKOVÁ, Zuzana   Institute – Secretariat
MAKULA, Matej, Ing.   Institute of Applied Informatics
MALINA, Dušan, Ing.   Institute of Computer Systems and Networks
MARKOŠOVÁ, Mária, RNDr. PhD.   Institute of Applied Informatics
MINÁROVÁ, Jana, doc. Ing. PhD.   Institute of Informatics and Software Engineering
MIŠÍKOVÁ, Zuzana   Deanship – Economics
MOLNÁR, Ľudovít, prof. RNDr. DrSc.   Institute of Informatics and Software Engineering
NEHÉZ, Martin, Mgr.   Institute of Informatics and Software Engineering
NIŽŇANSKÝ, Milan   Centre of Computing and Communication Services
NÁVRAT, Pavol, prof. Ing. PhD.   Institute of Informatics and Software Engineering
PAPULA, Jozef, doc. Ing., PhD.   Institute of Informatics and Software Engineering
PARÍZKOVÁ, Jana, RNDr.   Institute of Applied Informatics
PAVLIČKO, Slavomír, Bc.   Centre of Computing and Communication Services
POLÁŠEK Ivan, Ing., PhD.   Institute of Informatics and Software Engineering
POSPÍCHAL, Jiří, doc. RNDr. DrSc.   Institute of Applied Informatics
POVAŽANOVÁ, Anna, Ing.   Institute of Informatics and Software Engineering
ROZINAJOVÁ, Viera, Ing. PhD.   Institute of Informatics and Software Engineering
RUSNÁKOVÁ, Ľudmila   Deanship – Economics
SOLČÁNY, Viliam, Ing.   Institute of Applied Informatics
STEINMÜLLER, Branislav, Ing.   Institute of Applied Informatics
STRNÁD, Ondrej, Ing., PhD.   Institute of Applied Informatics
SUCHAN, Martin   Centre of Computing and Communication Services
ŠAFAŘÍK, Jiří, prof. Ing., PhD.   Institute of Informatics and Software Engineering
ŠELMÉCIOVÁ, Mária   Deanship – Economics
ŠEŠERA, Lubor, RNDr., PhD.   Institute of Informatics and Software Engineering
ŠIMÁKOVÁ, Valéria, RNDr.   Institute of Informatics and Software Engineering
ŠPERKA, Martin, doc. Ing. PhD.   Institute of Applied Informatics
ŠPIČKA, Ján, Ing.   Faculty Secretary
ŠTEFANOVIČ, Juraj, Ing. PhD.   Institute of Applied Informatics
TIŇO, Peter, Ing. PhD.   Institute of Applied Informatics
TOLLÁROVÁ, Alžbeta   Deanship – Study Affairs
TOMALOVÁ, Elena, Ing.   Institute of Computer Systems and Networks

TOMANOVÁ, Eva	Deanship – Economics
URBANÍKOVÁ, Eva	Deanship – Study Affairs
VOJTEK, Vladimír, prof. Ing. PhD.	Institute of Applied Informatics
VRANIĆ, Valentino, Ing. PhD.	Institute of Informatics and Software Engineering