FACULTY OF INFORMATION TECHNOLOGY

BRNO UNIVERSITY OF TECHNOLOGY

ANNUAL REPORT 2004

BRNO 2004
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**ANNUAL REPORT 2004**
I. INTRODUCTION

Brno University of Technology (BUT) is the second largest and the second oldest technical university in the Czech Republic. It was founded in 1849 for technical, agricultural and commercial specialization. The languages of instruction were Czech and German. As a consequence of political and national disputes, Czech ceased to be used as language of tuition and in 1899 the Czech High Technical School was founded in Brno. After World War I and the foundation of Czechoslovakia, the school merged with the German Technical High School (originally bilingual) to form the High Technical School in Brno, which later carried the name of Dr. Edvard Beneš, the second president of Czechoslovakia. In the period between World War I and World War II this school was among the best technical universities in Europe.

During World War II the school was, as all other high schools were, closed and the premises were used by German military institutions, and most equipment was destroyed. Immediately after the end of World War II the activities of the school were resumed. In 1951, the Technical High School was closed and the departments became parts of the newly established Military Technical Academy. Tuition for civilians continued at the former faculty of civil engineering only. However, it soon became evident that the technical university should be re-established. Since 1956 the school gradually started its activities in various fields.

The Faculty of Information Technology (FIT) at Brno University of Technology was established on 1st January 2002 from the former Department of Computer Science and Engineering, Faculty of Electrical Engineering and Computer Science, Brno University of Technology. The Department of Computer Science and Engineering (DCSE) was established in 1964. Further development of the Department was related to the dynamic development in the area of computer science and its applications, called informatics. The ever-increasing demands on specialists in this area determined the extent and orientation of the teaching, research tasks and joint projects and they also influenced the increase in number of students and staff of the Department. The increasing importance of teaching informatics at the faculty brought a transformation to the Faculty of Electrical Engineering and Computer Science (FEECS) in 1993 and separation of the computer science study plans from the rest not later than after the 1st semester of the common study programme.

At the end of the millennium the importance of the DCSE and the ratio of informatics in teaching exceeded the organizational, technical and financial limits so that the transformation of the DCSE into a new faculty could be launched.

A number of historical decisions were taken at the FEECS in 2001 in connection with the planned foundation of a new Faculty of Information Technology (FIT) and transformation of the Faculty of Electrical Engineering and Computer Science (FEECS) into the Faculty of Electrical Engineering and Communication (FEEC). The Academic Senate of BUT approved the establishment of the faculty to 1st January 2002. The uneasy task of working out new study programmes for both faculties for accreditation was crowned by
In the second year of the second three-year office BUT was directed by Prof. Ing. RNDr. Jan Vrbka, DrSc., Dr.h.c., Doc. Ing. František Zbořil, CSc., a member of the Department of Intelligent Systems, was another significant leading personality of BUT coming from our faculty – he was the Chairman of the AS BUT. Ing. Jaroslav Švec, a student of postgraduate doctoral study at the FIT, worked in the second year of the second three-year office as a Vice-Chairman and Chairman of the Students’ Chamber of the Academic Senate of BUT.

In 2004, Prof. Ing. Tomáš Hruška, CSc., the Dean, directed the FIT together with four Vice-Deans. The Vice-Deans are in charge of research and creative activities, international and external relations and campus development together with the relevant Dean’s Office Departments. The Scientific Board, the Pedagogical Council and the Disciplinary Board are the Dean’s advisory bodies. The Faculty Secretary is responsible for faculty organization, development and economic issues, which are carried out by the relevant Dean’s Office Departments. In 2004, there was a teaching staff of 45 members and 1551 students in all state-supported study programmes.

The faculty management in 2004:

Prof. Ing. Tomáš Hruška, CSc.  Dean
Prof. RNDr. Milan Češka, CSc.  Vice-Dean, Science and Research
Prof. Ing. Jan M. Honzík, CSc.  Vice-Dean, Public Relations
Doc. Ing. Vladimir Drábek, CSc.  Acting Dean
Ing. Zdeněk Bouša  Vice-Dean, Education
Ing. Zdeněk Bouša  Vice-Dean, Campus Development

Ing. Zdeněk Bouša worked as the Faculty Secretary. Doc. Ing. Jaroslav Zendulka, CSc., Head of the Department of Information Systems, became the Chairman of the Academic Senate of the FIT for the second time. Ing. Petr Lampa, Head of the Computer Centre FIT BUT, was re-elected the first Vice-Chairman of the Academic Senate of the FIT.

Zdeněk Vráblík, a student, worked in the position of the second Vice-Chairman of the Academic Senate of the FIT, and also in the position of the President of the Student Union FIT BUT till 15th June, 2004. Vlastimil Kaluža, another student, worked as a Vice-Chairman of the Student Chamber of the AS FIT till the end of the first term of office. On 2nd November 2004, Zdeněk Letko was elected to be in charge of the two functions.

Doc. Ing. Josef Schwarz, CSc., represented the Trade Union in the faculty management.

In its third year, the faculty consisted of four departments and the Computer Centre:
• Department of Information Systems
• Department of Intelligent Systems
• Department of Computer Graphics and Multimedia
• Department of Computer Systems
• Computer Centre
In 2004, the FIT continued tuition in the below-mentioned Bachelor's and Master's study programmes *Electrical Engineering and Computer Science (EI)*, registered in 1999 according to University Education Act. These running out study programmes are likely to continue until the end of the academic year 2006/2007. In 2004, the FIT also provided tuition in the **Ph.D. study programme Information Technology (DIT)** with the Ph.D. qualification. 2004/2005 was the third year of the existence of the three-year **Bachelor's study programme Information Technology**, which was introduced to the faculty in 2002/2003. In 2005/2006, a two-year follow-up **Master's study programme Information Technology** will be launched. These new study programmes correspond to the Bologna Declaration on the Development of Higher Education in Europe and their structure of studies is fully compatible within Europe.

**Study programmes taught at the FIT in 2004:**

*Bachelor’s study programme Electrical Engineering and Computer Science*
Nominal length of study: 3.5 years
Line of study: Computer Science and Engineering

*Follow-up Master’s study programme Electrical Engineering and Computer Science*
Nominal length of study: 3 years
Line of study: Computer Science and Engineering

*Master’s study programme Electrical Engineering and Computer Science*
Nominal length of study: 5 years
Line of study: Computer Science and Engineering

*Bachelor’s study programme Information Technology*
Nominal length of study: 3 years
Line of study: Information Technology (BIT)

**Doctoral study programme**
Nominal length of study: 3 years (internal form) or 7 years (combined form)  
Line of study: Information Technology (DIT)

A new follow-up Master’s study programme Information Technology will be launched at the FIT in the academic year 2005/2006 with the following lines of study:

- Information Systems
- Computer Graphics and Multimedia
- Intelligent Systems
- Computer Systems and Networks

In 2004, 5 Bachelors, and 95 students of the five-year Master’s study programme graduated at the FIT and 14 students completed the Ph.D. study programme. 511 new students entered the first year of the regular study, 22 students entered the postgraduate doctoral study, 21 in the internal form, and 1 in the combined form of study.

In 2004, tuition in English was provided for 5 foreign students who paid their tuition fees.
In 2004, one professorship procedure and one habilitation proceedings for the title of “Docent” (Associate Professor) were initiated.

The most significant events and activities that influenced the life at the faculty in 2004, were the following:

- Microsoft Day at the FIT BUT, on 7th January 2004,
- Open Day at the FIT BUT, on 15th January, 2004,
- The traditional FIT/FEEC ball, a high-level and well-organized event which took place in Voroněž Hotel, on 30th January 2004,
- Work on the innovation of the “Long-Term Plan of Development of BUT”,
- Work on the innovation of the “Long-Term Plan of Development of the Faculty”,
- Activities of the pedagogical staff of the FIT related to the new study programmes,
- Four new GACR (Grant Agency of the Czech Republic) projects were accepted in 2004, the total number of GACR projects at the faculty being 12 (7 standard projects and 5 postdoctoral projects),
- Five new FRVS (University Development Fund) projects,
- Seven MSMT (Ministry of Education) projects were worked on,
- Three EU projects were worked on (one of them was new - AMI Project, with prof. Ing. Hynek Heřmanský, doc. Dr. Ing. Jan Černocký, and doc. Dr. Ing. Pavel Zemčík as fellow-researchers and heads of the FIT teams) and two EU projects were handed in,
- Participation in the EU project (6NET, Large-Scale International IPv6 Pilot Network) and entering another EU project (GN2, Multi-Gigabit European Academic Network) within the research activity Programmable Hardware, CESNET, where Ing. Jan Kořenek, a researcher from the FIT, co-operated,
- Three CESNET projects were worked on, some students and staff from the FIT collaborated in two tasks of a CESNET research plan and one new CESNET project started,
- A new GACR project was accepted: “Rapid prototyping tools for development of HW - accelerated embedded image- and video-processing applications”, with doc. Dr. Ing. Pavel Zemčík as a co-researcher from the FIT,
- Engineering products: Ing. Přemysl Kršek, Ph.D.: Transfer 3.0 Modelling System for Medicine: is a programme system for 3D tissue inspection and segmentation, for creation of 3D geometry models of tissues and their applications for virtual and real simulations, operation planning and testing, and for production of physical tissue models,
- New laboratories: Laboratory of medical engineering applications with a view to generating 3D geometry models of tissues from CT/MR data and to the production of physical models of tissues. The laboratory co-operates with the Faculty of Medicine, Masaryk University, Brno, and St. Anna’s Hospital in Brno. 3D geometry models of selected tissues are made from real CT/MR data aiming at the development of special applications in stomatology, plastic surgery, orthopeday and neuroradiology. These models are used for virtual stimulations, testing and planning of operations. Another possibility could be the production of physical models of tissues for real simulations, and testing and planning of operations.
- Ing. Lukáš Sekanina, Ph.D., was awarded the Fulbright scholarship for scientists and spent the winter semester (2004) in NASA Jet Propulsion Laboratory,
California Institute of Technology, Pasadena, USA. He was engaged in evolutionary design of electronic circuits on reconfigurable analogue platforms and at extremely low temperatures.

- Displacement and development of the FIT Library, admission of Mgr. Barbora Selingerová as a new librarian, and investments of 1,041,000 CZK in the library resources, which was supervised by doc. Dr. Ing. Jan Černocký, Chairman of the FIT Library Council,

- Dr. Ing. Otto Fučík, prof. Ing. Jan M. Honzík, CSc. and doc. Dr. Ing. Pavel Zemčík participated in the evaluation of exhibits for the “Cristal Disc“ award at INVEX trade fair,

- Co-organization of the MOSIS 03’ conference (Modelling and Simulation of Systems), Brno, 19th to 21st April 2004, organized by FEEI VŠB-TU Ostrava,

- Co-organization of the ISIM’04 conference (Information Systems Implementation and Modelling), Brno, 19th to 21st April 2004, organized by FEEI VŠB-TU Ostrava,

- Organization of 11th Annual IEEE International Conference and Workshop on the Engineering of Computer-Based Systems, ECBS 2004). The conference was held on 24th – 27th May 2004 in BUT Centre in Brno. prof. Ing. Miroslav Švéda, CSc., (FIT ÚIFS) was the Director of the Conference, prof. Ing. Václav Dvořák, DrSc. (FIT UPSY Department of Computer Systems) was the Chairman of the Programme Committee, and Ing. Lukáš Sekanina, Ph.D. and Ing. Richard Růžička, Ph.D. were the leaders of the Organization Committee,

- Organization of a Socrates IP international course (Intensive Programme Project),

- Activities of doc. Ing. Vladimír Drábek, CSc., Vice-Dean, and his colleagues resulting in automated assessment of written entrance examinations,

- Commencement of participation in the three-year international Leonardo da Vinci programme “Requalification of Disabled Persons”,

- Activities of doc. Ing. Vladimír Drábek, CSc., Vice-Dean, and Ing. Miloš Eysselt, CSc., advisor for studies, concerned with defining the mechanism for internal and inter-faculty distribution of funds for tuition (especially FIT / FEEC) and mutual payment for tuition,

- Activities of pedagogical staff connected with information sessions at different types of secondary schools,

- Co-organization of STUDENT EEICT 2004 Conference, the main organizer being the Faculty of Electrical Engineering and Communications, Brno University of Technology,


- Participation in the GAUDEAMUS 2004 trade fair and presentation of the new study programmes offered at the faculty,

- CSEW 2004 (Computer Science Education Workshop) – a meeting of Czech and Slovak institutes, departments and faculties involved in computer science – was held in Trojanovice, in the Beskydy mountains on 14th – 15th October 2004,

- Elections of the members of the Academic Senate FIT BUT, on 19th October 2004,

- Activities of the AS FIT BUT members, namely doc. Ing. Jaroslav Zendulka, CSc., Ing. Petr Lampa, Ing. Bohuslav Křena, Ph.D., Zdeněk Vráblik and Zdeněk Letko, focused on faculty interests in the areas of organization, development and economy,
• Call for candidates for the position of the Dean of the FIT for the term of office 2005-2008 took place on 2nd November 2004,
• A get-together of the academic community aimed at meeting up with the nominees for the position of the Dean of the FIT was held on 1st December 2004,
• Nomination by the AS FIT of prof. Ing. Tomáš Hruška, CSc., for the position of the Dean of the FIT, took place on 7th December 2004,
• Preparatory work on a new research plan Modelling and Optimization of Computer-Based Application-Specific Systems, a team of researchers from the FIT led by prof. Ing. Jan M. Honzík, CSc.,
• Activities of prof. Ing. Jan M. Honzík, CSc., Vice-Dean for Public Relations, in Socrates/Erasmus, and other European programmes,
• Activities of prof. Ing. Jan M. Honzík, CSc. related to the “Research in Information and Control Systems” research project,
• Activities of prof. Ing. Jan M. Honzík, CSc., concerned with preparing the Bachelor’s programme “Information Technology” and its distance form for accreditation, with relation to the development programmes of the Ministry of Education,
• Improvements in the student section of the FIT information system.

Awards in 2004

Doc. Ing. Zdeňka Rábová, CSc. was awarded the Gold Medal of Brno University of Technology for her significant contribution to the development of higher education.

On the occasion of the 105th anniversary of the foundation of Brno University of Technology, doc. RNDr. Alexander Meduna, CSc. was awarded the Rector’s Prize for his significant book publication.

The Rector’s Award was conferred to Ing. Ivana Rudolfové for her outstanding study results and diploma thesis.

Ing. Josef Novosad (FIT BUT) gained a good position in the 8th year of the AFCEA student’s competition for the best work in the area of information and communication systems.

Ing. Josef Strnadel, Ph.D. was awarded prof. Hlavička Prize for his contribution „Testability analysis and improvements of register-transfer level digital circuits presented at the Computer Architecture and Diagnostics PAD 2004 Workshop for Ph.D. students.

Ing. Lukáš Sekanina, Ph.D. was awarded the Merit Award in Human-competitive awards in genetic and evolutionary computation, at the Genetic and Evolutionary Computation Conference (GECCO) 2004, Seattle, U.S.A, for the evolutionary design of image filters.

Jiří Techet won the second place in the international STUDENT EEICT 2004 competition for his engineering project in the section of Informatics and Mathematics.

Ing. Tomáš Pečenka received the Siemens Award (scholarship support for Ph.D. students) for his excellent dissertation.
In 2004, FIT BUT continued co-operating with the following significant partners:

- ANF Siemens Austria
- AutoCont CZ
- CAMEA
- CESNET
- GRISOFT
- Honeywell
- IBM Czech Republic
- MEDITRONIC
- Microsoft
- MP-Soft Brno
- VEMA

2004 was the third year of existence of the FIT. The main goal was the introduction of the 3rd year of the new Bachelor’s study programme with more than 1030 students admitted. The completion of restructuring the management personnel at the Dean’s office and gaining and training new high-quality staff were also highly significant.

On behalf of the management of the Faculty of Information Technology BUT I wish all members of academic staff, students, and all employees of the faculty favourable working conditions, and success in their efforts for a further development and benefit of all. At the same time, I thank all employees who contributed to the functioning of the FIT in its third year of existence, for the extraordinary efforts devoted to the foundation of the FIT, and for mutual understanding, solidarity, and wisdom they showed when seeking solutions to difficult problems.

prof. Ing. Tomáš Hruška, CSc.
Dean of the FIT BUT
AREAS OF ACTIVITIES AT THE FIT

II.1 Study Programmes

First-Level of Master’s Study and Bachelor’s Study Programme

At the end of 2004, there were 1558 students studying at the FIT in all study programmes including the doctoral one. See the following table:

<table>
<thead>
<tr>
<th>Specialization</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>EI-MGR-5, CSE</td>
<td>385</td>
</tr>
<tr>
<td>EI-MGR-3, CSE</td>
<td>7</td>
</tr>
<tr>
<td>IT-BC-3</td>
<td>1024</td>
</tr>
<tr>
<td>EI-BC-3, CSE</td>
<td>26</td>
</tr>
<tr>
<td>IT-DR-3</td>
<td>106</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1558</strong></td>
</tr>
</tbody>
</table>

The rising number of applicants for the study programme „Information Technology“ can be seen in the last three lines of the following table in connection with the numbers of applicants for CSE – Computer Science and Engineering in the previous years. As the new Information Technology study programme is linking up well to the tradition of the running out study programme Electrical Engineering and Computer Science with the specialization Computer Science and Engineering (CSE), we can compare the numbers of students interested in the specialization in the following table:

<table>
<thead>
<tr>
<th>Academic year</th>
<th>Applicants</th>
<th>Admitted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996/97</td>
<td>229</td>
<td>120</td>
</tr>
<tr>
<td>1997/98</td>
<td>251</td>
<td>130</td>
</tr>
<tr>
<td>1998/99</td>
<td>245</td>
<td>140</td>
</tr>
<tr>
<td>1999/00</td>
<td>212</td>
<td>120</td>
</tr>
<tr>
<td>2000/01</td>
<td>200</td>
<td>129</td>
</tr>
<tr>
<td>2001/02</td>
<td>468</td>
<td>280</td>
</tr>
<tr>
<td>2002/03</td>
<td>2145 *)</td>
<td>340</td>
</tr>
<tr>
<td>2003/04</td>
<td>1718 *)</td>
<td>463</td>
</tr>
<tr>
<td>2004/05</td>
<td>1870 *)</td>
<td>651</td>
</tr>
</tbody>
</table>

Numbers with *) show the number of applications. Until the academic year 2001/2002 the students had not been specialized before the end of the first semester, in fact, only students who had already been admitted to the faculty were specialized.

1870 applications for admission to the Information Technology study programme for Bachelors were sent to the FIT BUT by the 31st March 2004. The entrance examinations took place on 9th and 11th June (with a back-up term on 7th July 2004).

1487 applicants turned up to sit for the entrance examinations, which makes 79.6% of the total number.

The written exam took place in 6 turns, each of them consisted of 9 groups with the same set of tasks, and there was only one group on the back-up date.
There was only one written examination in mathematics (75 minutes, 20 tasks, 1000 points max.).
The number of points necessary for admission was 604 out of 1000.

The limit for “pass“ was the total of 250 points minimum.

The Answer Sheets were scanned and processed by computer to avoid errors in point counting. The results of the entrance examination were published 2 hours later on the official notice board and on the FIT BUT Web page. The applicants received a notice about whether they had been admitted or not by a post-office special delivery.

Admitted: 651
Refused (due to lack of capacity): 613
Failed: 149
Absent: 381
Admitted without the entrance examination: 52
Matriculation: 28\textsuperscript{th} to 30\textsuperscript{th} June 2004
548 students enrolled (IT study programme) by 1\textsuperscript{st} August 2004.

Applicants for admission to the FIT were successful by 34.2 % (37.3% and 21% in the previous years).

**Comprehensive Examinations and the Second Level Study**

The limit of weighted study average, which makes an exemption from the examination possible, was set to be 2.5 in 2003/04. 113 out of the total of 124 students were exempted from the examination. Out of the 11 students who were doing the comprehensive examination 10 passed.

The structure of the oral part of the **Final State Examination** was based on two themes: Hardware and Software. Besides the defence of the thesis each student had to answer one question from each of the two themes. 100 undergraduates passed the Final State Examination, 5 of whom were Bachelors.

**Number of Graduates in Computer Science and Engineering**

<table>
<thead>
<tr>
<th>Specialization</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSE</td>
<td>77</td>
<td>96</td>
<td>107</td>
<td>100</td>
<td>95</td>
<td>100</td>
</tr>
</tbody>
</table>

...doc. Ing. Vladimir Drábek, CSc.
Vice-Dean for Education
II.2 Creative Activities, Science, Research and Postgraduate Doctoral Study

The new faculty continued in the tradition of basic and applied research in the area of computer hardware, software, prototypes of computer systems, and application of information technology in practical life. The main research areas at the FIT BUT in 2004 were the following:

- Information Systems
- System Modelling and Simulation
- Artificial Intelligence
- Computer Graphics and Multimedia
- Computer Architecture
- Speech Processing
- High Performance Computing
- Petri Nets

Let us mention here some important events which could give evidence of the faculty activities and which are likely to influence its development in the years to come:

- A design of a new inter-faculty research plan called Modelling and optimization of computer-based application-specific systems meant for the period of 2005 – 2009.
- Activities of the co-ordination group that helps to increase the number of grants and projects the faculty will be involved in, including the EU ones.
- Publication activities of the faculty (2 monographs, 26 articles in journals and 164 contributions in conference proceedings).
- Work of the faculty members in international scientific and research organizations, editing boards of journals and programme committees of conferences (see paragraphs “Membership in Organizations and Societies“ in chapters of this Annual report which are dedicated to the individual departments).
- Organization of regular professional seminars with the participation of all faculty departments.
- Further development and use of the faculty information system, which helps to improve the quality of research infrastructure. (A substantial part of this report has also been generated as an output of the mentioned information system.)
II.2.2.1 European Union Projects at the FIT in 2004

<table>
<thead>
<tr>
<th>Agency</th>
<th>Theme</th>
<th>Project Code</th>
<th>Name of the Project</th>
<th>Total thous. CZK</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU</td>
<td>AMI</td>
<td>506811</td>
<td>Augmented Multi-Party Interaction</td>
<td>3840</td>
</tr>
<tr>
<td>EU-HLT</td>
<td>IST</td>
<td>2001-34485</td>
<td>Multi Modal Meeting Manager</td>
<td>46</td>
</tr>
<tr>
<td>EU</td>
<td>IST</td>
<td>1999-10003</td>
<td>SPEECOON - Speech Driven Interfaces for Consumer Applications</td>
<td>365</td>
</tr>
</tbody>
</table>

II.2.2.2 Grant Agency of Czech Republic (GACR) Projects at the FIT in 2004

<table>
<thead>
<tr>
<th>GACR</th>
<th>Name of the Project</th>
<th>Total thous. CZK</th>
</tr>
</thead>
<tbody>
<tr>
<td>102/04/0780</td>
<td>Automated Methods and Tools for the Development of Reliable Parallel and Distributed Systems</td>
<td>612</td>
</tr>
<tr>
<td>102/04/0737</td>
<td>Modern Methods of Digital System Synthesis</td>
<td>466</td>
</tr>
<tr>
<td>102/04/0871</td>
<td>Information System Security – Research on Attacks Against Tamper-Resistant Cryptographic Hardware</td>
<td>852</td>
</tr>
<tr>
<td>201/04/0441</td>
<td>Optimally Integrated Models of Modern Information Technologies</td>
<td>330</td>
</tr>
<tr>
<td>102/02/0124</td>
<td>Voice Technologies for Support of Information Society</td>
<td>256</td>
</tr>
<tr>
<td>102/02/0503</td>
<td>Parallel System Performance Prediction and Tuning</td>
<td>249</td>
</tr>
<tr>
<td>102/02/1032</td>
<td>Embedded Control Systems and their Inter-Communication</td>
<td>244</td>
</tr>
<tr>
<td>102/01/D141</td>
<td>Development in the Area of Creating FEM Models of Human Tissues for Biomechanics Applications</td>
<td>203</td>
</tr>
<tr>
<td>102/02/D108</td>
<td>Data-Driven and Anthropic Coding and Recognition of Speech</td>
<td>246</td>
</tr>
<tr>
<td>102/03/P176</td>
<td>Formal Approach to Planning Tests of Digital Circuits</td>
<td>185</td>
</tr>
<tr>
<td>102/03/P004</td>
<td>Evolvable Hardware Based Applications Design Methods</td>
<td>201</td>
</tr>
<tr>
<td>102/03/D211</td>
<td>Advanced Methods of Automatic Verification of Parametric and Infinite-State Systems</td>
<td>40</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>3884</strong></td>
</tr>
</tbody>
</table>
II.2.2.3 Higher Education Development Fund (FRVS) Projects at the FIT in 2004

<table>
<thead>
<tr>
<th>FRVS</th>
<th>MSMT</th>
<th>Theme</th>
<th>Name of the Project</th>
<th>Total Thous. CZK</th>
</tr>
</thead>
<tbody>
<tr>
<td>1687</td>
<td>A</td>
<td>Compound Laboratory for Computer Hardware Teaching</td>
<td>861</td>
<td></td>
</tr>
<tr>
<td>1688</td>
<td>A</td>
<td>Laboratory of Intelligent Systems</td>
<td>870</td>
<td></td>
</tr>
<tr>
<td>1689</td>
<td>F1</td>
<td>Introduction to SW Engineering – Innovation of the Subject</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>1690</td>
<td>F1</td>
<td>Knowledge Discovery in Databases – Innovation of the Subject</td>
<td>48</td>
<td></td>
</tr>
<tr>
<td>1692</td>
<td>G1</td>
<td>Application of Object-Oriented Development in Project Management</td>
<td>78</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>1932</td>
</tr>
</tbody>
</table>

II.2.2.4 Research Projects at the FIT in 2004


<table>
<thead>
<tr>
<th>Research project</th>
<th>Name of the project</th>
<th>Total Thous. CZK</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSM262200012</td>
<td>Research in Information and Control Systems at the FIT</td>
<td>5546</td>
</tr>
<tr>
<td>MSM262200012</td>
<td>Research in Information and Control Systems at the FEEC DCI</td>
<td>1300</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>6846</td>
</tr>
</tbody>
</table>

The research project is aimed at research of theoretical and applied methods of design, verification, implementation and evaluation of information and control systems and their components covering both hardware and software. The research is directed into three areas which correspond to logical levels of the architecture of the control systems and the management support systems:

- Area of information systems and support to the management level
- Area of communication, control algorithms and process and control systems
- Data acquisition and evaluation

The whole research field is divided into the following eight areas, which are the subjects and partial aims of the research project:

- Methods and tools for system modelling
- Technology and design of information systems
- Computer graphics and multimedia in information and control systems
- Architecture of software and hardware in imbedded systems
- Computer-aided control
- Computer networks and systems of industrial automation
- Computer vision
- Sensors, digital processing and computer analysis of measured signals
Seven research teams were involved in research of these individual areas (Computer graphics and Computer vision form one whole).

In 2004, the research team included 8 professors (3400 hrs.), 15 associate professors (8200 hrs.), 58 other staff (22980 hrs.) and 69 doctoral students.

The main target for the coming research period is to enrich the contemporary standard of knowledge in the explosively developing discipline of information and industrial technologies through new ideas and innovations. This is supported by the structure of research teams, their management and regular evaluation.

The project management headed by the investigator used its own methodology to guarantee stable quality of research work under changing rules, and provides general information for internal evaluation and comparison of all members of the research team. One part of this methodology is a detailed internal annual report on the research plan. (http://www.fit.vutbr.cz/research/vzamer).

Preparatory work on a new research plan (RP) was another important research activity in 2004. Discussions of the most significant staff members led to an agreement on the design and timing of the RP, and in the first place its size and staffing. The consideration resulted in the following main features:

- The new RP will form a follow-up to the present RP and will be proposed for a 5-year period
- The new RP will be the only one submitted by the FIT
- It will be a middle-sized inter-faculty research plan

The name of the RP had been discussed thoroughly. The original proposal “Advanced Information Technologies“ seemed to be too general and was later changed to “Modelling and Optimization of Computer-Based Application-Specific Systems“ which fits better the main goals of the RP and at the same time involves the most traditional and most successful research areas of the former department and the present faculty.

The administrator of the proposed RP is the Faculty of Information Technology, Brno University of Technology, the investigator is prof. Ing. Jan M. Honzík, CSc., and the RP was given an identification number MSM 0021630505.

The formation of the staff of the proposed RP had also gone through a complicated development. The co-operation with the FEEC BUT was reduced to two researchers. On the other hand, the co-operation with a research group from the Faculty of Business and Management (FBM) was re-inforced significantly. Its orientation, mainly in the area of information systems and intelligent systems, has rather an application character: its main task is application and verification of theoretical results and models created within the RP.

Young and promising postdoctoral research workers played an important part in the formation of the goals and of the structure of the research team. They are not only supposed to contribute to the successful completion of the research plan but also to get important positions within the research team. In future, they will hopefully form a new generation which will contribute to the completion of the above-mentioned RP as well as initiate new scientific and research projects and occupy leading positions in them.
A large number of members of the FIT academic and technical staff aided by some researchers from the FBM worked on the final design of the plan. Several months of intensive preparatory work proved to be highly demanding for the staff. The main goal was to present a high-quality research plan without the least, even formal errors.

The efforts were compensated by informal evaluation done by the BUT Scientific Board, where the presented RP proposal was evaluated to be one of the two best among 18 RPs within BUT.

II.2.2.5 Survey of Other Projects at the FIT in 2004

<table>
<thead>
<tr>
<th>Agency</th>
<th>Project Code</th>
<th>Name</th>
<th>Total Thous. CZK</th>
</tr>
</thead>
<tbody>
<tr>
<td>MŠMT</td>
<td>MS1412001</td>
<td>Design and Implementation of embedded formal verification assistants in the NET framework</td>
<td>544</td>
</tr>
<tr>
<td>MŠMT</td>
<td>MŠMT 628</td>
<td>Project integrating the development of learning and teaching English, enhancing the language competence including the internationalization of study programmes</td>
<td>500</td>
</tr>
<tr>
<td>MŠMT</td>
<td>MŠMT 629</td>
<td>Integrated project of the development of distant and combined forms of education at BUT</td>
<td>1175</td>
</tr>
<tr>
<td>MŠMT</td>
<td>MŠMT 631</td>
<td>Promotion of information and communication technologies at BUT</td>
<td>600</td>
</tr>
<tr>
<td>MŠMT</td>
<td>MŠMT 632</td>
<td>Joint international pilot study programmes at BUT</td>
<td>300</td>
</tr>
<tr>
<td>MŠMT</td>
<td>MŠMT 642</td>
<td>Equipment of the FIT BUT Library</td>
<td>800</td>
</tr>
<tr>
<td>MŠMT</td>
<td>1KO4106</td>
<td>Reputation-based security in information systems</td>
<td>198</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>4117</strong></td>
</tr>
</tbody>
</table>

II.2.2.6 Survey of external sources in funding creative activities at the FIT in 2004

<table>
<thead>
<tr>
<th>Source</th>
<th>Project</th>
<th>Number of projects</th>
<th>Total Thous. CZK</th>
</tr>
</thead>
<tbody>
<tr>
<td>MŠMT</td>
<td>Research projects</td>
<td>1</td>
<td>5 546</td>
</tr>
<tr>
<td>MŠMT</td>
<td>FRVS projects</td>
<td>10</td>
<td>1 932</td>
</tr>
<tr>
<td>MŠMT</td>
<td>Other MŠMT projects</td>
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<td>4 521</td>
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<tr>
<td>GAČR</td>
<td>GACR projects</td>
<td>11</td>
<td>3 884</td>
</tr>
<tr>
<td>EU</td>
<td>Projects of the 5th framework programme of the EU</td>
<td>2</td>
<td>4 251</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>19 730</strong></td>
</tr>
</tbody>
</table>
Funding creative activities at the FIT from external sources in 2004
II.2.3. Doctoral Study Programme

The Information Technology doctoral study programme with one specialization of the same name was started at the same time as the FIT BUT – on 1st January 2002. The main tasks solved in this area in 2004 were the following:

- Offer of a wide choice of courses at a high professional level, a well-balanced combination of theory and applications of IT, and availability of detailed descriptions of the individual courses (in Czech and English) on the Internet for both present and future students.
- Co-operation with the Faculty of Electrical Engineering and Communications, Faculty of Business and Management, BUT, and with the Faculty of Informatics, Masaryk University in Brno as far as the offer of courses, organization of the State Doctoral Examinations, and defenses of dissertations are concerned.
- Preparatory work for two GACR doctoral grants in co-operation with the Faculty of Informatics, Masaryk University in Brno.
- Consistent checking of the individual study plans of Ph.D. students followed by differentiated payment of extra scholarship money.
- Introduction of a system encouraging students to complete their dissertations during the 3rd and 4th years of study with the use of scholarship money “stimulus”.
- Creation of a new concept of organization and content of doctoral examinations.
- Record of dissertation theses and offer of new themes through the Faculty Information System.
- Participation of Ph.D. students in regular professional seminars at the faculty.

### PhD. study statistics

<table>
<thead>
<tr>
<th>Year</th>
<th>Type of study</th>
<th>Number of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>internal</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>combined</td>
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</tr>
<tr>
<td>2.</td>
<td>internal</td>
<td>29</td>
</tr>
<tr>
<td></td>
<td>combined</td>
<td>4</td>
</tr>
<tr>
<td>3.</td>
<td>internal</td>
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<tr>
<td></td>
<td>combined</td>
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<tr>
<td>4.</td>
<td>combined</td>
<td>25</td>
</tr>
<tr>
<td>5.</td>
<td>combined</td>
<td>7</td>
</tr>
<tr>
<td>6.</td>
<td>combined</td>
<td>7</td>
</tr>
<tr>
<td>7.</td>
<td>combined</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>119</td>
</tr>
</tbody>
</table>
II.2.3.1. Ph.D. theses defended in 2004

Ph.D. student: Ing. Milan Kolka
Study area: Information Technology
Thesis: L-systems: new results and applications
Supervisor: doc. RNDr. Alexandr Meduna, CSc.
Defended on: 17th March 2004

Ph.D. student: Ing. Martin Hrubý
Study area: Information Technology
Thesis: Environment for modelling heterogeneous systems
Defended on: 21st June 2004

Ph.D. student: Ing. Jiří Staroba
Study area: Information Technology
Thesis: Parallel performance modelling, prediction and tuning
Supervisor: prof. Ing. Václav Dvořák, DrSc.
Defended on: 21st June 2004

Ph.D. student: Ing. Radek Burget
Study area: Information Technology
Thesis: Information extraction from HTML documents based on logical
document structure
Defended on: 6th October 2004

Ph.D. student: Ing. Jakub Güttner
Study area: Information Technology
Thesis: Object databases and the semantic web
Supervisor: prof. Ing. Tomáš Hruška, CSc.
Defended on: 6th October 2004

Ph.D. student: Ing. Bohuslav Křena
Study area: Information Technology
Thesis: Methods of analysis of object-oriented Petri nets
Supervisor: prof. RNDr. Milan Češka, CSc.
Defended on: 20th October 2004
Ph.D. student: Ing. David Řezáč
Study area: Information Technology
Thesis: Stiff systems of differential equations and modern Taylor series method
Defended on: 20th October 2004

Ph.D. student: Ing. František Zbořil
Study area: Information Technology
Thesis: Planning and communication in multi-agent systems
Supervisor: doc. Dr. Ing. Petr Hanáček
Defended on: 20th October 2004

Ph.D. student: Ing. Filip Orság
Study area: Information Technology
Thesis: Biometric security systems
Supervisor: doc. Ing. František Zbořil, CSc.
Defended on: 27th October 2004

Ph.D. student: Ing. Josef Strnadel
Study area: Information Technology
Thesis: Testability analysis and improvements of register-transfer level digital circuits
Supervisor: doc. Ing. Zdeněk Kotásek
Defended on: 27th October 2004

Ph.D. student: Ing. Adam Herout
Study area: Information Technology
Thesis: Hardware architecture for point-based graphics rendering
Supervisor: doc. Dr. Ing. Pavel Zemčík
Defended on: 29th October 2004

Ph.D. student: Ing. Radek Koči
Study area: Information Technology
Thesis: Methods and tools for implementation of open simulation systems
Defended on: 29th October 2004
Ph.D. student: Ing. Jaromír Marušinec
Study area: Information Technology
Thesis: Artificial life simulation in virtual reality
Defended on: 29th October 2004

Ph.D. student: Ing. Lukáš Burget
Study area: Information Technology
Thesis: Complementarity of speech recognition systems and system combination
Supervisor: doc. Dr. Ing. Jan Černocký
Defended on: 3rd November 2004

prof. RNDr. Milan Češka, CSc.
Vice-Dean for Creative Activities

prof. Ing. Jan M. Honzík, CSc.
Research leader of the RP MSM262200012
II.2.4. Student Creativity

The student creativity at the FIT was based on a long tradition and experience. Student conferences and competitions in computer science and information technology have been organized annually since 1972.

Since the FEECS split into the FIT and FEEC, STUDENT EEICT (Electrical Engineering, Information and Communication Technologies) Conference and Competition have been organized for students of both faculties.

In 2004, the student conference took place on 22\textsuperscript{nd} April at the premises of BUT Under Palacky Hill. After the opening ceremony, students of the FIT Master's study programme and Ph.D. students defended their work in the following specializations: Information Systems, Theoretical Informatics, and Computer, Intelligent and Graphic Systems.

The evaluation committees were formed by academics, sponsors, and representatives of the Student Union. After presentations the committees chose the best contributions and suggested the financial reward for the individual authors. Thus the academic approach, attractiveness for industry and students' viewpoint were encompassed. There were 22 competitors from the Ph.D. study programme and 34 students of the Master's study programme of the FIT present. All contributions were successfully reviewed and published in a shortened version in the Proceedings of the Conference. The electronic version of the proceedings can be found on the Internet and CDs.

After all committees had completed their work, a final ceremony took place in which all sponsoring companies were introduced. The representatives of the sponsoring companies together with the Vice-Deans for Research prof. Ing. Zbyněk Raida, CSc. and prof. RNDr. Milan Češka, CSc. awarded the prizes to the winners.

We hope that these students' competitions will continue in the future, as they bring unique motivation for students' creativity work.

The importance of the student creativity is especially high in case of our young faculty as a considerable number of winners enter the Ph.D. study programme and several most outstanding graduates become new young members of the academic staff.

doc. Ing. Zdeňka Rábová, CSc.
II.3 International Relations

International activities at the FIT are dealt with by the following group: the Vice-Dean prof. Ing. Jan M. Honzík, CSc., Mrs. Michaela Studená, the assistant for public relations, and a teacher with considerable international experience (doc. Dr. Ing. Pavel Zemčík). International activities are focused on support of international mobility of both students and teachers, on organizing and offering tuition to foreign students who pay their tuition fees and on information and reference service. In 2003, there were bilateral agreements between the faculty and 16 foreign universities in the framework of Socrates/Erasmus programme and 23 students spent some time at study stays abroad.

Each student’s language competence for the particular study stay is highly emphasized and tested at a competition, in co-operation with the Department of Languages, the Faculty of Electrical Engineering and Communication, BUT, (PhDr. Marcela Borecká).

In June 2004, the FIT BUT organized a summer school in the framework of the Socrates "Intensive Program Project in Informatics and Multimedia". It was organized in the FIT lecture halls, under the auspices of prof. Jan M, Honzík , from 7th to 18th June 2004. 11 teachers from abroad and 6 teachers from the FIT participated in the event and 16 students from partner universities from abroad and 21 students from the FIT completed the course and received leaving certificates.

During this event (on 11th June 2004) a preparatory consultative meeting on the second stage of the PROG Socrates project “Joint European Degree Program in Applied Informatics and Multimedia” took place on the premises of the Rector’s Office. Representatives of foreign partner universities as well as teachers from the summer school took part in it.
The following table lists foreign partners who had active bilateral agreements with the FIT within the framework of Socrates/Erasmus.

<table>
<thead>
<tr>
<th>Country</th>
<th>University</th>
<th>Erasmus code</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finland</td>
<td>Helsinki University of Technology</td>
<td>FI ESPOO 01</td>
<td><a href="http://www.hut.fi/English/">http://www.hut.fi/English/</a></td>
</tr>
<tr>
<td></td>
<td>Lappeenrannan University of Technology</td>
<td>SF LAPPEEN 01</td>
<td><a href="http://www.lut.fi/english.html">http://www.lut.fi/english.html</a></td>
</tr>
<tr>
<td></td>
<td>University of Joensuu</td>
<td>SF JOENSUU 01</td>
<td><a href="http://www.joensuu.fi/englishindex.html">http://www.joensuu.fi/englishindex.html</a></td>
</tr>
<tr>
<td></td>
<td>Université de Paris 7-Denis Diderot</td>
<td>F PARIS 007</td>
<td><a href="http://www.sigu7.jussieu.fr">http://www.sigu7.jussieu.fr</a></td>
</tr>
<tr>
<td>The Netherlands</td>
<td>Utrecht University, Julius School of Physics and Astronomy</td>
<td>NLUTRECHT01</td>
<td><a href="http://www1.phys.uu.nl/home_eng.htm">http://www1.phys.uu.nl/home_eng.htm</a></td>
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<td><a href="http://www.math.uu.nl">http://www.math.uu.nl</a></td>
</tr>
<tr>
<td>Germany</td>
<td>Universität Siegen, IMT</td>
<td>D SIEGEN 01</td>
<td><a href="http://www.fb12.uni-siegen.d">http://www.fb12.uni-siegen.d</a></td>
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<td></td>
<td>Fachhochschule Wiesbaden</td>
<td>D WIESBAD 01</td>
<td><a href="http://fh-web1.informatik.fh-wiesbaden.de/go.cfm">http://fh-web1.informatik.fh-wiesbaden.de/go.cfm</a></td>
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<td>Austria</td>
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<td><a href="http://www.tugraz.at">http://www.tugraz.at</a></td>
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<tr>
<td>Spain</td>
<td>Universidad de Valladolid</td>
<td>E VALLADO 01</td>
<td><a href="http://www.uva.es/">http://www.uva.es/</a></td>
</tr>
<tr>
<td>Great Britain</td>
<td>University of Surrey</td>
<td>UK GUILDF0 01</td>
<td><a href="http://www.surrey.ac.uk">http://www.surrey.ac.uk</a></td>
</tr>
<tr>
<td></td>
<td>University of Bristol</td>
<td>UK BRISTOL 01</td>
<td><a href="http://www.bris.ac.uk">http://www.bris.ac.uk</a></td>
</tr>
</tbody>
</table>
### Student mobilities at the FIT in 2004 - ERASMUS and others

#### Stays abroad:

<table>
<thead>
<tr>
<th>Name</th>
<th>Stay</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drahanský Martin, Ing.</td>
<td>01/04 – 12/04</td>
<td>Germany, Universität Siegen (apart from ERASMUS)</td>
</tr>
<tr>
<td>Burian Tomáš</td>
<td>01/04 – 05/04</td>
<td>UK, University of Salford</td>
</tr>
<tr>
<td>Marek Martin</td>
<td>01/04 – 05/04</td>
<td>Finland, Lapeenranta University of Technology</td>
</tr>
<tr>
<td>Soukup Petr</td>
<td>01/04 – 05/04</td>
<td>Finland, Lapeenranta University of Technology</td>
</tr>
<tr>
<td>Svoboda Petr</td>
<td>01/04 – 06/04</td>
<td>UK, University of Bristol</td>
</tr>
<tr>
<td>Söke Igor</td>
<td>02/04 – 07/04</td>
<td>France, ESIEE Amiens</td>
</tr>
<tr>
<td>Šimek Václav</td>
<td>02/04 – 06/04</td>
<td>Belgium, Katholieke Hogeschool Brugge Oostende</td>
</tr>
<tr>
<td>Masařík Karel</td>
<td>02/04 – 06/04</td>
<td>Germany, Fernuniversität Hagen</td>
</tr>
<tr>
<td>Grézl František</td>
<td>02/04 – 12/04</td>
<td>Switzerland, Institut Dalle Molle d Intelligence Artificielle Perceptive (apart from ERASMUS)</td>
</tr>
<tr>
<td>Svojanovský Petr</td>
<td>02/04 – 12/04</td>
<td>Switzerland, Institut Dalle Molle d Intelligence Artificielle Perceptive (apart from ERASMUS)</td>
</tr>
<tr>
<td>Karafiát Martin, Ing.</td>
<td>06/04 – 09/04</td>
<td>UK, University of Sheffield (apart from ERASMUS)</td>
</tr>
<tr>
<td>Hýl Petr</td>
<td>08/04 – 12/04</td>
<td>Sweden, Uppsala University School of Engineering</td>
</tr>
<tr>
<td>Měřínský Radek</td>
<td>08/04 – 12/04</td>
<td>Finland, Lapeenranta University of Technology</td>
</tr>
<tr>
<td>Bartušek Jan</td>
<td>09/04 – 12/04</td>
<td>Finland, University of Joensuu</td>
</tr>
<tr>
<td>Fiedler Zdenek</td>
<td>09/04 – 12/04</td>
<td>Finland, University of Joensuu</td>
</tr>
<tr>
<td>Holenda Stanislav</td>
<td>09/04 – 12/04</td>
<td>Germany, Universität Siegen</td>
</tr>
<tr>
<td>Hrouza Jan</td>
<td>09/04 – 12/04</td>
<td>Spain, Universidad de Valladolid</td>
</tr>
<tr>
<td>Ježowicz Janusz</td>
<td>09/04 – 12/04</td>
<td>UK, University of Bristol</td>
</tr>
<tr>
<td>Kostelecký Ivo</td>
<td>09/04 – 12/04</td>
<td>France, ESIEE Amiens</td>
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<td>Kratochvíl Tomáš</td>
<td>09/04 – 12/04</td>
<td>France, ESIEE Amiens</td>
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<tr>
<td>Macek Aleš</td>
<td>09/04 – 12/04</td>
<td>Spain, Universidad de Valladolid</td>
</tr>
<tr>
<td>Pavelka Miroslav</td>
<td>09/04 – 12/04</td>
<td>UK, University of Bristol</td>
</tr>
<tr>
<td>Šopík Bronislav</td>
<td>09/04 – 12/04</td>
<td>Portugal, UTAD</td>
</tr>
<tr>
<td>Tichý Jan</td>
<td>09/04 – 12/04</td>
<td>Austria, Graz University of Technology</td>
</tr>
<tr>
<td>Vítek Martin</td>
<td>09/04 – 12/04</td>
<td>Finland, Lapeenranta University of Technology</td>
</tr>
<tr>
<td>Potůček Igor</td>
<td>09/04 – 10/04</td>
<td>Germany, Technische Universität München (apart from ERASMUS)</td>
</tr>
<tr>
<td>Walek Tomáš</td>
<td>10/04 – 12/04</td>
<td>Germany, Universität Siegen</td>
</tr>
<tr>
<td>Rogalewicz Adam</td>
<td>10/04 – 12/04</td>
<td>France, ESIEE Paris</td>
</tr>
<tr>
<td>Glembek Ondřej</td>
<td>10/04 – 11/04</td>
<td>Russia, Izhevsk State Technical University (apart from ERASMUS)</td>
</tr>
<tr>
<td>Galbavý Lubomír</td>
<td>10/04 – 12/04</td>
<td>Austria, CISC Klagenfurt, Leonardo project</td>
</tr>
</tbody>
</table>

Unlabelled stays: Finance Socrates/Erasmus, MSMT CR and the mobility fund of BUT
Visiting students:

<table>
<thead>
<tr>
<th>Name</th>
<th>Stay</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pekka Keränen</td>
<td>02/04 – 07/04</td>
<td>Finland, Lapeenranta University of Technology</td>
</tr>
<tr>
<td>Miguel Santos de Pablo</td>
<td>02/04 – 07/04</td>
<td>Spain, Universidad de Valladolid</td>
</tr>
<tr>
<td>Raquel Parra Diez</td>
<td>02/04 – 07/04</td>
<td>Spain, Universidad de Valladolid</td>
</tr>
<tr>
<td>Francesco la Torre</td>
<td>02/04 – 07/04</td>
<td>Germany, Fachhochschule Wiesbaden</td>
</tr>
<tr>
<td>Julien Piquot</td>
<td>03/04 – 06/04</td>
<td>France, Université du Maine, (apart from ERASMUS)</td>
</tr>
<tr>
<td>Julien Reptin</td>
<td>04/04 – 06/04</td>
<td>France, ESIEE Amiens</td>
</tr>
<tr>
<td>Angela Hua</td>
<td>04/04 – 07/04</td>
<td>France, ESIEE Paris</td>
</tr>
<tr>
<td>Emmanuel Borry</td>
<td>04/04 – 07/04</td>
<td>France, ESIEE Paris</td>
</tr>
<tr>
<td>Alexis Dambricourt</td>
<td>04/04 – 07/04</td>
<td>France, ESIEE Amiens</td>
</tr>
<tr>
<td>Anurag Gaggar</td>
<td>05/04 – 08/04</td>
<td>India, Indian Institute of Technology (INTERNSHIP)</td>
</tr>
<tr>
<td>Dhiraj Goel</td>
<td>05/04 – 08/04</td>
<td>India, Indian Institute of Technology (INTERNSHIP)</td>
</tr>
<tr>
<td>Olga Rola Monteiro</td>
<td>10/04 – 01/05</td>
<td>Portugal, UTAD</td>
</tr>
<tr>
<td>Efrain Pardo</td>
<td>10/04 – 06/05</td>
<td>México, graduated from TEC de Monterrey (apart from ERASMUS)</td>
</tr>
</tbody>
</table>

List of participants of the Socrates IP Summer School in Brno, June 2004

Foreign lecturers:
Prof. George Papadourakis, TEI Crete, Greece
Prof. Dimitri Karayannakis, TEI Crete, Greece
Prof. George Pangalos, Aristotle University of Thessaloniki, Greece
Assoc. Prof. Pablo de la Fuente, Universidad de Valladolid, Spain
Prof. Andrew Ware, University of Glamorgan, Wales
Prof Jozef Vanneuville, Katholieke Hogeschool Brugge – Oostende, Belgium
Ing. Dorine Gevaert, Katholieke Hogeschool Brugge – Oostende, Belgium
Ing. Jeroen Lambert, Katholieke Hogeschool Brugge – Oostende, Belgium
Assoc. Prof. Michael Eboueya, La Rochelle University, France
Dr. Markus Grabner, Graz University of Technology
Dr. Michael Frydrych, Helsinki University of Technology, Finland

FIT lecturers:
Prof. Jan M. Honzík
Assoc. Prof. Vladimír Drábek
Assoc. Prof. Pavel Zemčík
Dr. Přemysl Kršek
Ing. Petr Přikryl
Ing. Adam Herout
Foreign students - participants of the Socrates IP Summer School in Brno:

Maria Boumaki, Université de la Rochelle, France
Stéphane Chapeau, Université de la Rochelle, France
Lional Slade, University of Glamorgan, Wales
Christian Ivaha, University of Glamorgan, Wales
Ruben González, Universidad de Valladolid, Spain
Iván Simón, Universidad de Valladolid, Spain
Juan Carlos López García, University of Córdoba, Spain
Alvaro García Ostos, University of Córdoba, Spain
Emmanouil Kokarakis, TEI of Crete, Greece
Anastasia Pampouchidou, TEI of Crete, Greece
Paraskevi Sympa, TEI of Crete, Greece
Apostolos Palogos, TEI of Crete, Greece
Nikolaos Mantzarakis, TEI of Crete, Greece
Panagiotis Palantas, TEI of Crete, Greece
Ioannis Stefanis, TEI of Crete, Greece
Konstantinos Papantonopoulos, TEI of Crete, Greece

FIT students - participants of the Socrates IP Summer School in Brno:

Petr Vlach
Zdeněk Fiedler
Jan Tichý
Ivo Kostelecký
Jiří Janeček
Stanislav Holenda
Petr Hýl
Tomáš Walek
Jan Bartušek
Richard Latislav
Aleš Macek
Miroslav Pavelka
Jozef Mlích
Tomáš Kratochvil
Jan Hrouza
Jiří Tobola
Michal Kašpářík
Marek Kaluža
Petr Weiss
Jaroslav Pospíšil
Václav Špok
List of lectures given within the Socrates IP Summer School in Brno, in June 2004:

Prof. Andrew Ware: Genetic Talk

Assoc. Prof. Pavel Zemčík: Hardware Acceleration of Graphics and Imaging Algorithms Using FPGAs

Assoc. Prof. Přemysl Kršek: Medical Image Processing and Tissues Geometry Modelling


Pablo de la Fuente: Distributed Systems. Concepts and Applications

Dr. Michael Frydrych: Modelling Facial Expressions for Finnish Talking Head

Prof. George Pangalos: Distributed Information Systems Security

Assoc. Prof. Michel Eboueya: Scientific Visualization

Prof. Dimitri Karayannakis: Wavelets and Signal Analysis

Ing. Petr Přikryl: The Python Language

Assoc. Prof. Vladimír Drábek: Graphical and Multimedia Processors GMP

Dr. Markus Grabner: 3D web

Prof. George Papadourakis: Neural Network

Prof. Ing. Jan M Honzík, CSc.: Faculty of Information Technology and Development of its Study Programmes

Vice-Dean for Public Relations
II.4 Lifelong Education

Doc. Ing. Jiří Kunovský, CSc. contributed to the programme of the Third Age University (U3V) in the first semester by lecturing and organizing a computer workshop, and by teaching computer science in the first, second and third semesters with assistance of three doctoral students.

After setting up a syllabus and discussing the matter in the UV3 Committee of BUT, doc. Kunovský started teaching a new attractive U3V course “Digital photography and computer graphics” in the winter semester. The course consisted of lectures and practical training in a modern computer laboratory of the FIT. The course will continue in the summer semester of 2005.

The third stage of the three-year MSMT project “Preparation of the Distance Form of Bachelor’s Study Programme Information Technology for Accreditation” was worked on. This study programme focused on e-learning and computer-aided technologies can also be used for lifelong education in future.

Ing. Kočí, Ph.D., and Ing. Martínek from the FIT provided all-year tuition of “Selected Parts of Informatics” for the secondary school in Videaňská Street, Brno. It took place in the IT Computer Centre once a week and offered the following topics of computer science: programming languages, especially C language, operation systems – fundamentals of Unix/Linux systems, networking, and work with the Internet, including programming interactive internet presentations (fundamentals of HTML, PHP, and Java).

Within the Government Policy on IT in Education, new accreditation of training centres was completed in 2004. The FIT was re-accredited for P preliminary training module and Z module. Several training courses were organized in close co-operation with ApS Brno s.r.o. and about 50 elementary and secondary school teachers were trained. In the academic year of 2004-2005, the content of courses on Microsoft technologies was innovated, especially in the area of administration and programming. The courses were organized in co-operation with the IT Training Centre and Microsoft Company. Students of the 2nd and 3rd years of the Bachelor's study programme are offered a set of five courses. Each of the courses prepares them for achieving the MCP Certificate – Microsoft Certified Professional, an internationally recognized certificate. Last year more than 20 students of the FIT received the certificate. Due to the increasing interest in attending the courses, the capacity of the courses was raised to 130 students per semester. Despite that, the demand strongly surpasses the offered capacity.

Vice-Dean for Public Relations
II.5 Dislocation, Modernization, and Development in 2004

In 2004, the managements of BUT and FIT concentrated on the second stage of the investment and strategic intention of dislocation and stabilization of the FIT in Božetěchova 2 and Božetěchova 1 premises. In the first half of 2004, a project for gaining the construction permit and the general contractor selection was made. Then the construction permit was applied for and the general contractor was chosen with the aim of starting the construction in the second half of 2004. The construction was ranked among individual constructions that were financed from the state budget. To have the chance of starting the construction in 2004, the application for the construction permit was split into two parts. The permit for the first stage was capable of taking effect on 8th December 2004 and the construction itself was initiated in 11/2004 with demolishing and clearing the site and with site exploration in one part of Božetěchova 1 premises. At the time of commencement of the construction work, operating documentation of the construction was being worked on and a project of mobile interior and an orientation system were created. With regard to financial underestimation of the investments some buildings had to be left out so as not to endanger the date of commencement of the construction and the technical condition of the buildings left on the site. The basic technological standard specifications for the equipment of buildings with respect to teaching and to the minimum costs of operation (intelligent building) were kept.

As part of the preservation of architectural heritage, reconstruction of the last southern seclusion was completed in 04/2004. Reconstruction and static security of the “mortuary” (one of the oldest and best preserved parts of the Cartesian monastery) were also completed with the use of the own financial resources of the FIT.

After the Department of Control and Instrumentation, FEEC, left Božetěchova 2 premises in the middle of 2004, minor reconstructions were made and two departments of the FIT were relocated into the cleared rooms. The FIT will stay in this layout till the first stage of Božetěchova 1 construction is completed.

An orientation system for Božetěchova 2 was completed in 2004. It will be followed by and interconnected with an outer and inner system of the whole investment intention (2004 to 2007).

It is the Vice-Dean Ing. Zdeněk Bouša, who is in charge of the extremely important and demanding task of the faculty development and finance.

Ing. Zdeněk Bouša
Vice-Dean for Campus Development
II.6. Library at the FIT

The library forms an information basis for education and research activities of the faculty and provides fast access to information so that the requirements of the students, teachers and other employees of the faculty could be met.

In September 2004, the library moved to new and more convenient premises which offer better access and more pleasant study environment for the users. In the new premises there is also free access to most of the library stock. There are 14 regular and 22 PC-equipped seats in two computer study rooms.

The library provides traditional lending, reference and reprographic services and, recently, also electronic service thanks to the web pages of the library (since November 2004) http://www.fit.vutbr.cz/lib. Apart from basic information on the library and its services, the web pages enable access to special databases, on-line journals and dictionaries.

In December 2004, the library entered the OPAC catalogue of the Aleph500 library system. The access to the on-line catalogue and instructions for access and searching can also be found on the library web pages. The operation of the library is fully automated.

The first year students attended a lecture called “Information Education” where they were informed about the basic library terminology and about the most important rules for written work, and they were also introduced to the services of BUT Library and the FIT Library.

In 2004, the library bookstock was enlarged by 890 units.

At the end of 2004, Czech and foreign books worth more than CZK 450,000 were ordered in accordance with the requirements of students and the pedagogical staff. The total sum for purchase of books and journals was CZK 1,281,231.

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<tr>
<th>Library statement for 2004</th>
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<tbody>
<tr>
<td>Number of books</td>
</tr>
<tr>
<td>-----------------</td>
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<tr>
<td>6 560</td>
</tr>
</tbody>
</table>

Mgr. Barbora Selingerová
Head of the Library
II.7. Annual Report - the Academic Senate of the FIT BUT in 2004

As new members of the Academic Senate of the FIT (AS FIT) were elected in 2004, the Annual Report consists of two parts. The first one is an annual report of the AS which was elected on 7th January 2002, after the establishment of the FIT, and worked till the elections which took place on 19th October 2004. The second part is an annual report of the AS which started working on 2nd November 2004.

Annual report – the AS FIT activity from 1st January 2004 to 2nd November 2004

Academic Senate

the Academic senate comprised:

doc. Ing. Jaroslav Zendulka, CSc.  
Chairman
Ing. Petr Lampa  
Vice-Chairman and
Chairman of the Chamber of the Academic Staff

Zdeněk Vráblík (up to 15th June 2004)  
Vice-Chairman and  
Chairman of the Student Chamber

Vlastimil Kaluža (from 15th June 2004)

Chamber of Academic Staff

Ing. Vladimír Janoušek, PhD.
RNDr. Jitka Kreslíková, CSc.
Ing. Petr Lampa
doc. RNDr. Alexander Meduna, CSc.
Dr. Ing. Petr Peringer
doc. Dr. Ing. Pavel Zemčík
doc. Ing. Jaroslav Zendulka, CSc.

Student Chamber

Stanislav Holenda (Master’s programme EI, CSE specialization)
Vlastimil Kaluža (Master’s programme EI, CSE specialization)
Ing. Bohuslav Křena (Ph.D. programme IT)
Marek Kyrsch (Master’s programme EI, CSE specialization)
Zdeněk Vráblík (Master’s programme EI, CSE specialization)

AS FIT Committees

Legislative Committee

Stanislav Holenda
Vlastimil Kaluža
doc. Ing. Jiří Kunovský, CSc. - Chairman
Ing. Petr Lampa

Economic Committee

RNDr. Jitka Kreslíková, CSc.
Ing. Bohuslav Křena
Activities of the AS FIT

The Academic Senate gathered at five meetings in 2004 with an average attendance of 89%. All meetings had a quorum.

Most of the meetings dealt with legislative and economic topics. At the end of the term of office the AS focused on preparatory work for the election of members of the AS FIT and on nomination of candidates for the position of the Dean of the FIT. (The present Dean’s term of office expires on 7th January 2005).

As far as the internal regulations are concerned, the Dean's Regulations completing the Study and Examination Regulations of BUT were agreed on. Those paragraphs of Study and Examination Regulations which were indispensable for the beginning of the new academic year were specified and amended.

The Academic Senate of the FIT and its management proposed some amendments of the Statute of BUT in the paragraph dealing with scholarships for doctoral students.

The Academic Senate agreed on the annual report on financial management of the FIT in 2003 and approved the FIT budget for 2004. The AS checked the fulfilment of the FIT budget in 2004 in its meeting on 5th October 2004.

The Academic Senate also discussed and approved the Annual Report on the Activities of the FIT in 2003.

A total of 18 decisions, out of which 8 concerned internal regulations and 3 economic issues, were approved. The other decisions concerned the Annual Report of 2003, the shortening of the presentation period and the nomination of the election committee for the elections of the members of the AS.

The Legislative Committee met three times to discuss the proposals of internal regulations of the FIT, and the Economic Committee of the AS FIT met once to discuss the FIT budget for 2004.
Annual report – the AS FIT activity after 2nd November 2004

Academic Senate
the Academic senate elected on 19th October 2004 consisted of:

doc. Ing. Jaroslav Zendulka, CSc.  
Ing. Petr Lampa
Chairman

Ing. Petr Lampa
Vice-Chairman and
Chairman of the Chamber of the Academic Staff

Zdeněk Letko
Vice-Chairman and
Chairman of the Student Chamber

Chamber of Academic Staff
Dr Ing. Otto Fučík
Ing. Radek Kočí, Ph.D.
Ing. Bohuslav Křížená, Ph.D.
Ing. Petr Lampa
doc. RNDr. Alexander Meduna, CSc.
Ing. Tomáš Vojnar, Ph.D.
doc. Ing. Jaroslav Zendulka

Student Chamber
Ing. Vítězslav Beran (Ph.D.programme IT)
Michal Hejč (Bachelor’s programme IT)
Jaroslav Kapoun (Master’s programme EI, CSE specialization)
Zdeněk Letko (Bachelor’s programme IT)
Jana Melicheríková (Master’s programme EI, CSE specialization)

AS FIT Committees

Legislative Committee
Ing. Vítězslav Beran
Michal Hejč
Ing. Bohuslav Křížená, Ph.D. – Chairman
doc. Ing. Jiří Kunovský, CSc

Economic Committee
Dr. Ing. Otto Fučík
Ing. Petr Lampa – Chairman
Ing. Tomáš Vojnar, Ph.D.
Ing. Vítězslav Beran
Jana Melicheríková
Activities of the AS FIT

The AS met at one constitutive and another regular meeting in 2004. The subject matters of the discussions were mainly some important internal regulations of the FIT, the nomination of candidates for the position of the Dean of the FIT and information concerning the commencing reconstruction of the Božetěchova 1 and Božetěchova 2 premises.

Revision of the Internal Regulations for Admission and of the requirements for admission to the Bachelor's study programme at the FIT BUT (namely admission without an entrance examination and the characteristics of the entrance examination) were discussed. New admission regulations for the FIT follow-up Master's study programme as well as the Dean’s Regulations completing the Study and Examination Regulations of BUT were agreed on.

The nomination of candidates for the position of the Dean of the FIT was another important task of the new AS. The date of the elections was announced during the constitutive meeting. The election committee received six proposals, in all of which prof. Ing. Tomáš Hruška, CSc. was nominated. The pre-election meeting of the academic community took place on 1st December 2004, the elections at the AS FIT meeting on 7th December 2004. The nomination of prof. Ing. Tomáš Hruška, CSc. for the position of the Dean for 2005 – 2008 was agreed on by the FIT AS in a ballot and suggested to the Rector of BUT.

During its two sessions the new AS FIT agreed on a total of 14 decisions, out of which 3 concerned internal regulations and 1 an economic issue. Further agreements concerned the elections for the AS FIT, permanent commissions of the AS FIT, nomination for the position of the Dean of the FIT and the annual reports of the AS FIT for 2004.

The Legislative Committee met once to discuss the proposal for the “Amendments to the BUT Study and Examination Regulations” and the “Internal Regulations for Admission and of the requirements for admission to the Master’s study programme at the FIT BUT“.

Doc. Ing. Zdeňka Rábová, CSc. worked as the FIT Deputy in the Czech Council of Higher Education (CHE). In 2004 she worked as the Chairperson of the Commission for Student Creativity and a member of the Commission for Information Technologies in higher education.

More detailed information about the individual sessions of the AS FIT can be found in the minutes (http://www.fit.vutbr.cz/FIT/AS/), which form part of the Faculty Information System.

doc. Ing. Jaroslav Zendulka, CSc.
Chairman AS FIT
II. 8. Student Organizations

The Student Chamber of the Academic Senate of the FIT represents the students of the FIT, is elected by the academic staff and co-operates closely with the Student Union of the FIT.

The Student Union of the FIT is an interest group of the FIT students. It is here to inform students about important activities and events at the FIT, and about all that is important for their successful study and life in Brno. It contributes to various events of the FIT or BUT.

Activities of the Student Chamber of the Academic Senate (SCAS) of the FIT in 2004

Student senators regularly attended the AS FIT meetings. They participated in the Economic and Legislative Committees of the Senate. After the elections in November 2004, the SCAS FIT worked in a new composition. The SCAS FIT members took part in a meeting of representatives of the Student Chambers of ASs of faculties of electrical engineering and faculties of information technology, which was held in Brno. The SCAS FIT also delegated its representatives to the individual work sections of the SCAS BUT.

Activities of the Student Union (SU) FIT in 2004

The members of the SU participated in the FIT Open Day and contributed to the organization of the joint ball of the FIT and FEEC. They also helped to promote the faculty at the international trade fair of higher education called Gaudeamus. They also visited some secondary schools to inform secondary school students about possibilities of studying at the FIT. The members of the SU helped to allocate residential accommodation to students of the FIT.

The members of the SU helped to promote various faculty events, such as: elections to the AS FIT, Microsoft Day, a meeting that informed about various study stays abroad for the FIT students,... The Student Union had their own T-shirts promoting the study at the FIT made and distributed among the students. The SU representatives worked in the committees of the Students’ Creativity Conference.

For the second time, the SU prepared a brochure containing useful information on the study start-up for the first-year students.

For the first time, the SU provided an audio-visual transmission of an event organized by Silicon Hill student club in Prague and a lecture on the Linux Operation System, which is used at the faculty.

The SU collaborated with the OpenMinds student group and helped to organize several workshops for the FIT and FI MU students.

Zdeněk Letko
Chairman SCAS FIT
DEPARTMENT OF INFORMATION SYSTEMS

The Department of Information Systems provides tuition in the Master’s study programme with the specialization Information Systems, which covers programming, formal languages and translators, database and information systems, computer nets, formal specifications, and internet and distributed applications. The aim is to inform students about theory, technology and methods of information systems development and teach them to develop such systems based on modern tools, methods and technologies. Apart from that the Department also provides tuition in a large number of basics in the Bachelor’s study programme Information Technology and offers subjects in the Ph.D. study programme Information Technology.

Scientific and research activities of the Department are focused on database technology, implementation of information systems, management of software projects, theory of formal languages and compilers. The main areas of interest are the following ones:

- Object-oriented modelling, object-oriented database systems, database design
- Knowledge discovery in databases
- Formal specifications of reactive systems and real-time systems
- Computer networks and communication protocols
- Information system implementation
- Software metrics and control of software projects
- Formal languages and
- Functional languages

The lectures in most courses are accompanied by projects or laboratory sessions, where students acquire necessary skills and useful experience with the latest SW packages, and with solving SW projects, and where they learn team work and project management.

Staff
Head of Department
Zendulka Jaroslav, doc. Ing., CSc.

Deputy Head of Department
Meduna Alexander, doc. RNDr., CSc.

Professors
Honzík Jan M., prof. Ing., CSc.
Hruška Tomáš, prof. Ing., CSc.
Švéda Miroslav, prof. Ing., CSc.

Associate Professors
Meduna Alexander, doc. RNDr., CSc.
Zendulka Jaroslav, doc. Ing., CSc.
Assistant Professors
- Burget Radek, Ing., Ph.D.
- Cvrček Daniel, Ing., Ph.D.
- Kolář Dušan, Dr. Ing.
- Kreslíková Jitka, RNDr., CSc.

Assistant Lecturers
- Bartík Vladimír, Ing.
- Matoušek Petr, Ing.
- Ráb Jaroslav, Ing.
- Ščuglík František, Ing.

Postgraduate Students
- Bednář David, Ing.
- Bíllo Radek, Ing.
- Blatný Petr, Ing.
- Bureš František, Ing.
- Čech Vladimír, Ing.
- Elbl Stanislav, Ing.
- Heckel Martin, Ing.
- Holub Milan, Ing.
- Hrouzek Jan, Ing.
- Kaláb Petr, Ing.
- Kopeček Tomáš, Ing.
- Křivka Zbyněk, Ing.
- Kubát Lubomír, Ing.
- Kurečka Radomír, Ing.
- Lorenc Luboš, Ing.
- Lukáš Roman, Ing.
- Martinek Zdeněk, Mgr.
- Masařík Karel, Ing.
- Očenášek Pavel, Ing.
- Petrucha Roman, Ing.
- Rudolfová Ivana, Ing.
- Ryšavý Ondřej, Ing.
- Strach Michal, Ing.
- Škrkal Oto, Ing.
- Švec Martin, Ing.
- Trávníček Miloš, Ing.
- Vítek Martin, Ing.
- Zeman David, Ing.

Equipment

The Department uses the equipment of the Computer Centre.

Tuition

<table>
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<th>Abbreviat.</th>
<th>Course</th>
<th>Sem</th>
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PPS  Software Engineering  L  5  39-8-0-0-18  
Zendulka Jaroslav, doc. Ing., CSc.

PDT  Data Transmission and Computer Networks  L  6  39-8-0-10-8  
Švéda Miroslav, prof. Ing., CSc.

RPS  Project Management of Computer-Based Systems  L  6  39-6-0-0-20  
Kreslíková Jitka, RNDr., CSc.

RPX  Project Management of Computer-Based Systems  L  7  39-0-0-14-12  
Kreslíková Jitka, RNDr., CSc.

IPM  Pascal and Modula Languages  L  4  39-0-0-0-13  
Honžík Jan M., prof. Ing., CSc.

ISA  Network Applications and Network Administration  Z  5  26-12-0-0-14  
Švéda Miroslav, prof. Ing., CSc.  
Švéda Miroslav, prof. Ing., CSc.

SVD  Specification of Embedded Systems  Z  0  39-0-0-0-0  
Hruška Tomáš, prof. Ing., CSc.

TJD  Programming Language Theory  Z  0  39-0-0-0-0  
Buřet Radek, Ing., Ph.D.

TWS  Web page design  Z  0  26-0-0-26-0  
Zendulka Jaroslav, doc. Ing., CSc.

IUS  Introduction to Software Engineering  Z  5  26-0-0-0-13  
Honžík Jan M., prof. Ing., CSc.

VKA  Selected Chapters on Algorithms  L  0  39-0-0-0-0  
Hruška Tomáš, prof. Ing., CSc.

VPD  Selected OOM Topics in Persistent Systems  L  0  39-0-0-0-0  
Kreslíková Jitka, RNDr., CSc.

IZP  Fundamentals of Programming  Z  7  39-0-0-12-14  
Meduna Alexander, doc. RNDr., CSc.

ZAP  Fundamentals of Translators  L  6  39-12-0-0-14  
Zendulka Jaroslav, doc. Ing., CSc.

ZZD  Knowledge Discovery in Databases  Z  0  39-0-0-0-13  
Zendulka Jaroslav, doc. Ing., CSc.

Research Projects

Information system security - research of attacks on tamper-resistant cryptographic hardware, GAČR, GA102/04/0871, 2004-2006  
Research leader: Hanáček Petr  
Team leaders: Cvrček Daniel, Hruška Tomáš, Peringer Petr, Rábová Zdeňka

Research leader: Hanáček Petr  
Team leader: Cvrček Daniel
Design and implementation of embedded formal verification assistants in the NET framework, MSR, MS1412001, 2004-2005  
**Research leader:** Švéda Miroslav  
**Team leaders:** Bureš František, Ryšavý Ondřej, Ščuglík František

Gaudeamus 2004, RP MŠMT, MŠMT 642/1 - 2004, 2004  
**Research leader:** Honzík Jan M.  
**Team leader:** Kreslíková Jitka

Innovation of the course Introduction of Software Engineering, FRVŠ MŠMT, FR 1689/2004/F1, 2004  
**Research leader:** Kreslíková Jitka

Innovation of the course Knowledge Discovery in Databases, FRVŠ MŠMT, FR1690/2004/F1, 2004  
**Research leader:** Zendulka Jaroslav

Project integrating the development of teaching in English, enhancing the language competences and including the internationalisation of the study programmes, RP MŠMT, MŠMT 628/2004, 2004  
**Research leader:** Rais Karel  
**Team leader:** Honzík Jan M.

Project integrating the development of distance and combined forms of education at BUT, RP MŠMT, MŠMT 629/2004, 2004  
**Research leader:** Švec Miloslav  
**Team leader:** Honzík Jan M.

Optimally Integrated Models of Modern Information Technologies, GAČR, GA201/04/0441, 2004-2006  
**Research leader:** Meduna Alexander  
**Team leader:** Kolář Dušan

Pilot Joint International Study Programme at BUT, RP MŠMT, MŠMT 632/2004, 2004  
**Research leader:** Honzík Jan M.  
**Team leader:** Rais Karel

Programmable hardware, CESNET, CESNET 34602/2004, 2004-2010  
**Research leader:** Novotný Jiří  
**Team leaders:** Čejka Rudolf, Fučík Otto, Kořenek Jan, Martínek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Vojnar Tomáš, Zemčík Pavel

Development programme "Promotion of the realization of the new structure and modular composition of the study programmes at BUT", RP MŠMT, MSMT 627/2004, 2004  
**Research leader:** Švec Miloslav  
**Team leader:** Honzík Jan M.
Development of Academic Centre for Students Activities, RP MŠMT, 2004
Research leader: Švec Jaroslav
Team leader: Švec Jaroslav

Research leader: Bednář David
Team leader: Kreslíková Jitka

Professionalization of Student Members in Higher Education Governance in Visegrad Group Countries, MVF, 36060356, 2003-2004
Research leader: Švec Jaroslav
Team leader: Švec Jaroslav

Intensive Programme project - IP - Applied Informatics and Multimedia, EC EUA ECTS, Socrates - IP, 2002-2004
Team leader: Honzík Jan M.

Preparation of the Distance Form of Bachelor's Study Programme “Information Technology” for Accreditation, MŠMT, MŠMT, 2002-2004
Research leader: Honzik Jan M.

Embedded Control Systems and their Inter-Communication, GAČR, GA102/02/1032, 2002-2004
Research leader: Švéda Miroslav
Team leaders: Bílek Jan, Srovnal Vilém

Research leader: Bouajjani Ahmed

Research in Information and Control Systems, CEZ MŠMT, MSM 262200012, 1999-2004
Research leader: Honzik Jan M.
Team leaders: Češka Milan, Zendulka Jaroslav, Zezulka František

Co-operation

Co-operation in the Czech Republic
- Application Software, s.r.o.
- Autocont CZ, a.s.
- CCB s r.o. Brno
- Demag Deleval Industrial Turbomachinery s r.o.
- Faculty of Informatics, MU Brno
- FAYN.CZ s r.o.
- InterSystems B.V.
- Department of Information and Knowledge Engineering, FIS, VŠE, Praha
- Department of Informatics FEI, VŠB – Technical University Ostrava
- Department of Automation and Measurement FEI, VŠB - Technical University Ostrava
- Department of Control Technology FEL, ČVUT Praha
• LBMS, s.r.o. Praha
• Mendel Museum Brno
• Microsoft, s.r.o.
• Minolta, s.r.o.
• MP-Soft, s.r.o. Brno
• Liberouter project, CESNET, group of formal verifications
• Software Technology Institute, a.s.
• STAVCERT, s.r.o. Praha
• UNIS, s.r.o., Brno
• VEMA, a.s.
• Military Academy in Brno
• Faculty of Applied Sciences, West Bohemian University, Plzeň

International Co-operation
• Institute for Molecular Pathology, Vienna, Austria
• LIAFA, Université Paris 7, Paris, France
• Slovak Technical University, Bratislava, Faculty of Informatics and Information Technology, Slovakia
• Sophia Solutions, Banská Bystrica, Slovakia
• Universidad de Valladolid, Valladolid, Spain
• University of Arizona, Tuscon, Arizona, USA
• Universität Siegen, Germany
• University of Stirling, Stirling, Scotland, UK
• Microsoft Business Solutions, Denmark
• OnDemand Ltd., Austria

Visits to the Department
• Dr. Manuel Barrio Solórzano (co-ordinator of Socrates/Erasmus), Dr. Valentín Cardenoso (Dean of the Faculty of Informatics and Telecommunications), Universidad de Valladolid, Valladolid, Spain, ES, 8 days
• Dr. Frank Eisenhaber (Head of the bio-informatic research group), Institute for Molecular Pathology, Vienna, Austria, 1 day

Visits of Staff Members to Foreign Institutions
• Honzík Jan M., prof. Ing., CSc., European Commision, Debrecen, HU, 4 days
• Matoušek Petr, Ing., Laboratoire d'Informatique Algorithmique: Fondements et Applications, Université Paris 7/CNRS, UMR 7089, LIAFA, 175 rue du Chevaleret 75013 Paris, France, 7 days
• Matoušek Petr, Ing., Laboratoire d'Informatique Algorithmique: Fondements et Applications, Université Paris 7/CNRS, UMR 7089, LIAFA, 175 rue du Chevaleret 75013 Paris, France, 9 days
• Meduna Alexander, doc. RNDr., CSc., Universidad de Valladolid, Valladolid, Spain, ES, 8 days
• Ráb Jaroslav, Ing., Institute for Molecular Pathology, Vienna, Austria, 30 days
• Ryšavý Ondřej, Ing., World Scientific and Engineering Academy, Salzburg, AT, 3 days
• Ryšavý Ondřej, Ing., International Centre for Computational Logic, TU Dresden, Hans-Grundig-Straße 25, 01307 Dresden, DE, 14 days
• Zendulka Jaroslav, doc. Ing., CSc., Universidad de Valladolid, Valladolid, Spain, ES, 8 days

Agreements
• Kreslíková Jitka, RNDr., CSc., Agreement on Professional Aid, STAVCERT Praha, spol s r.o.
• Zendulka Jaroslav doc., Ing., CSc., Caché Campus Program Participation, Memorandum of Understanding – Addendum, InterSystems Corporation
• A Bilateral Agreement on Student and Teacher mobilities within the Socrates/Erasmus Programme Made with La Universidad de Valladolid, http://www.uva.es/, ES

Membership in Organizations and Societies
• Bureš František, Ing.,
  o IEEE
• Honzík Jan M., prof. Ing., CSc.,
  o IGIP
  o IFIP
  o EUA-ECTS/DS National Coordinator
• Hruška Tomáš, prof. Ing., CSc.,
  o ACM
• Kreslíková Jitka, RNDr., CSc.,
  o Czech Society for Quality
  o Project Management Association
  o Czech Electrotechnical Society
• Ryšavý Ondřej, Ing.
  o IEEE
• Ščuglík František, Ing.
  o IEEE
• Švec Jaroslav, Ing.,
  o The European Higher Education Society
• Švéda Miroslav, prof. Ing., CSc.,
  o IFIP WG10.1
  o IEEE Computer Society
  o IEEE Technical Committee on Engineering of Computer-Based Systems

• Zendulka Jaroslav, doc. Ing., CSc.,
  o ACM
  o Czech and Slovak Simulation Society (CSSS)

Publications

Books:


Book Chapters:


Journals:

Bond Mike, Cvrček Daniel, Murdoch Steven J.: Reverse-engineering of a cryptographic module, Cryptoworld, Praha, CZ, 2004, p. 6


Heckel Martin, Zendulka Jaroslav: Data Mining and Its Use in Texture Analysis, In: Fundamenta Informaticae, 2004, No. 60, Amsterdam, NL, pp. 173-186, ISSN 0169-2968


Kopeček Tomáš: Mandrake Linux 9.0 Community Edition – A Review, In: IT System, vol. 6, No. 5, Brno, CZ, p. 3, ISSN 1212-4567


Conference Proceedings:


Conferences:


Švec Jaroslav: Project Management and Young Project Managers Group (YPMG) in the Czech Republic, In: Published on WWW, Kiev, UA, 2004, p. 16


Research Projects:


Lectures:


Studies:

Matoušek Petr: Planning and Preparatory Work for a New Subject at the FIT BUT, Brno, CZ, 2004, p. 38

Dissertations:

Burget Radek: Information Extraction from HTML Documents Based on Logical Document Structure, Brno, CZ, FIT BUT, 2004, p. 85

Seminars

<table>
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<tr>
<th>Date</th>
<th>Seminar</th>
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<tr>
<td>29.11.2004</td>
<td>Design and implementation of NET library for formal specification and verification – F. Ščuglík, O. Ryšavý</td>
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<td>22.11.2004</td>
<td>Generation of sentences with their parses by propagating scattered context grammars – A. Meduna, J. Techet</td>
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<td>15.11.2004</td>
<td>Combined leftmost derivations in matrix grammars - O. Škrkal</td>
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<tr>
<td>8.11.2004</td>
<td>Canonical derivations in matrix grammars - A. Meduna</td>
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<tr>
<td>1.11.2004</td>
<td>My new Ph.D. students and their research - A. Meduna</td>
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<td>25.10.2004</td>
<td>Repetitions in text and finite automata - B. Melichar</td>
</tr>
<tr>
<td>18.10.2004</td>
<td>Data structures for parametric verification - P. Matoušek</td>
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<td>4.10.2004</td>
<td>Information extraction from HTML documents based on logical document structure - A. Meduna, J. Zendulka, R. Burget</td>
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<td>5.4.2004</td>
<td>Visual HTML document modelling for information extraction - R. Burget</td>
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<tr>
<td>29.3.2004</td>
<td>On certain topology on Z 2 and the corresponding Jordan curves - J. Šlapal</td>
</tr>
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<td>15.3.2004</td>
<td>Multigenerative grammar systems - A. Meduna, R. Lukáš</td>
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<tr>
<td>8.3.2004</td>
<td>Parametric analyses of PGM protocol - P. Matoušek</td>
</tr>
</tbody>
</table>

Other Activities

- Organization of an international IEEE Conference “Engineering of Computer-Based Systems”, Brno, 2004
- Co-organization of the "7th Information Systems Implementation and Modelling" (ISIM 2004). It is an international conference on theory, modelling techniques and tools, methods of information systems design and database systems (together with KI FEI VŠB-TU Ostrava)
- 8th Conference on Advances in Databases and Information Systems (ADBIS 2004), Budapest, Hungary
- Membership in the evaluation board of the competition called Crystal Disc within the framework of the international trade fair of information technology Invex 2004, where prof. Honzík acted as the chief executive of the evaluation board.
- Participation in the 11th Gaudeamus – Fair on Education, whose supervisor, founder and advisory board chairman is prof. Ing. Jan M. Honzík, CSc.
• Prof. Honzík is the National Co-ordinator of ECTS (the only one in the Czech Republic) in EUA (European University Association). EUA is an important European body – the only representative of all universities in EU.
• Membership in the national “Bologna Promoters“ team working in the ECTS/DS area.
DEPARTMENT OF INTELLIGENT SYSTEMS

The Department of Intelligent Systems provides tuition of subjects for the Intelligent Systems specialization. This specialization synthesizes knowledge from several scientific areas: classical artificial intelligence, system modelling, simulation and formal analysis over system models, neural networks, genetic algorithms and fuzzy systems. The common features here are the non-traditional ways of computing that enable solving extremely complex problems, uncertainties and dynamism of processes in progress.

The graduates will become experts in system modelling and creation, in signal recognition (speech and visual image processing), processing of natural language and decision-making based on inaccurate and incomplete information. They will also master intelligent control systems, intelligent information systems and intelligent robots.

The research activity of the Department covers first of all intelligent systems, but attention is also paid to systems for specific applications, computer-based systems, interface design and the use of multi-level parallelism. Further fields of interest are: integration of components into embedded applications, simulation and prototyping of different configurations, and formal specification and verification of the design.

Most subjects are accompanied with projects or laboratory sessions so that students might acquire practical skills and experience with the latest software products and systems.

Staff

Head of the Department
Hanáček Petr, doc. Dr. Ing.

Deputy Head of the Department
Rábová Zdeňka, doc. Ing., CSc.

Professors
Češka Milan, prof. RNDr., CSc.

Associate Professors
Hanáček Petr, doc. Dr. Ing.
Kunovský Jiří, doc. Ing., CSc.
Rábová Zdeňka, doc. Ing., CSc.
Zbořil František, doc. Ing., CSc.

Assistant Professors
Hrubý Martin, Ing. Ph.D.
Janoušek Vladimír, Ing., Ph.D.
Kočí Radek, Ing., Ph.D.
Kříž Bohuslav, Ing., Ph.D.
Marek Vladimír, Ing.
Orság Filip, Ing., Ph.D.
Peringer Petr, Dr. Ing.
Vojnar Tomáš, Ing., Ph.D.
Zbořil František jr., Ing. Ph.D.

Assistant
Martinek, David, Ing.

Ph.D. Students
Černohorský Jakub, Ing.
Drahanský Martin, Ing.
Erlebach Pavel, Ing.
Floríán Vladimír, Ing.
Grulich Lukáš, Ing.
Novosad Petr Ing.
Petřek Jiří, Ing.
Pospíšil Dominik, Mgr.
Rogalewicz Adam, Mgr.
Rozman Jaroslav, Ing
Řezáč David, Ing., Ph.D.
Schwarz Ivan, Ing.
Slavíček Pavel, Ing.
Smrčka Aleš, Ing.
Tomica Petr, Ing.
Turakhodjaeva Nasibakhon
Zacios Dalibor, Ing.

Equipment

The Department uses the equipment of the Computer Centre

Tuition

<table>
<thead>
<tr>
<th>Abbr</th>
<th>Course</th>
<th>Sem</th>
<th>Cr.</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BPI</td>
<td>Bachelor's project CSE</td>
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<td>6</td>
<td>0-0-0-0-78</td>
<td>Rábová Zdeňka, doc. Ing., CSc.</td>
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<td>BKR</td>
<td>Computer security and cryptography</td>
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<td>6</td>
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<td>Hanáček Petr, doc. Dr. Ing.</td>
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<td>BIS</td>
<td>Security of information systems</td>
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<td>Hanáček Petr, doc. Dr. Ing.</td>
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<td>DPI</td>
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<td>DPX</td>
<td>Diploma project (abroad)</td>
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<td>IE1</td>
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<td>Peringer Petr, Dr. Ing.</td>
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<td>CPP</td>
<td>C Language</td>
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<td>IMS</td>
<td>Modelling and simulation</td>
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<td>Rábová Zdeňka, doc. Ing., CSc.</td>
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<tr>
<td>APP</td>
<td>Advanced computer applications</td>
<td>L</td>
<td>6</td>
<td>39-0-0-26-0</td>
<td>Zbořil František, doc. Ing., CSc.</td>
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<td>NEU</td>
<td>Neural networks</td>
<td>Z</td>
<td>6</td>
<td>39-0-0-0-26</td>
<td>Janoušek Vladimír, Ing., Ph.D.</td>
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<td>OMP</td>
<td>Object-oriented modelling and prototyping</td>
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<td>6</td>
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<td>Vojnar Tomáš, Ing., Ph.D.</td>
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<td>IOS</td>
<td>Operation systems</td>
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<td>39-0-0-0-13</td>
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<tr>
<td>OS1</td>
<td>Operation systems 1 (for foreign students)</td>
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<td>PDA</td>
<td>Parallel and distributed algorithms</td>
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<td>Češka Milan, prof. RNDr., CSc.</td>
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<td>RDID</td>
<td>Discussion over Dissertations</td>
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<td>PI3</td>
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<td>ICP</td>
<td>The C++ Programming Language</td>
<td>L</td>
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<td>Peringer Petr, Dr. Ing. Janoušek Vladimír, Ing., Ph.D.</td>
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<td>IJA</td>
<td>Java</td>
<td>L</td>
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<td>IST</td>
<td>Smalltalk</td>
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<td>TI1</td>
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<td>TI2</td>
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<td>TAD</td>
<td>Theory and applications of Petri nets</td>
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<td>Artificial intelligence</td>
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<td>Computer applications</td>
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<td>Computability and complexity</td>
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<td>39-0-0-0-0</td>
<td>Kunovský Jiří, doc. Ing., CSc.</td>
</tr>
</tbody>
</table>

Research Projects
Automated methods and tools supporting development of reliable parallel and distributed systems, GAČR, GA102/04/0780, 2004-2006
Research leader: Češka Milan
Team leaders: Haša Luděk, Janoušek Vladimír, Kočí Radek, Křena Bohuslav, Řábová Zdeňka, Vojnar Tomáš

Information system security - research of attacks on tamper-resistant cryptographic hardware, GAČR, GA102/04/0871, 2004-2006
Research leader: Hanáček Petr
Team leaders: Cvrček Daniel, Hruška Tomáš, Peringer Petr, Řábová Zdeňka

Reputation-based security in information systems, MŠMT, 1K04106, 2004-2007
Research leader: Hanáček Petr
Team leader: Cvrček Daniel

BioCompress, FHG-IGD, BioCompress, 2004
Research leader: Arnold Michael
Team leaders: Busch Christoph, Drahanský Martin

European Research Training Network SegraVis - Syntactic and Semantic Integration of Visual Modelling Techniques, EU, HPRN-CT-2002-00275, 2004-2005
Gaudeamus 2004, RP MŠMT, MŠMT 642/1 - 2004, 2004
Research leader: Honzík Jan M.
Team leader: Kresliková Jitka

Intelligent Systems Laboratory, FRVŠ MŠMT, FR1688/2004/A, 2004
Research leader: Zbořil František
Team leader: Hanáček Petr

Programmable Hardware, CESNET, CESNET 34602/2004, 2004-2010
Research leader: Novotný Jiří
Team leaders: Čejka Rudolf, Fučík Otto, Kořenek Jan, Martinek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Vojnar Tomáš, Zemčík Pavel

Advanced Methods of Automatic Verification of Parametric and Infinite-State Systems, GAČR, GA102/03/D211, 2003-2006
Research leader: Vojnar Tomáš
Team leader: Češka Milan

Research leader: Bouajjani Ahmed
Research in Information and Control Systems, CEZ MŠMT, MSM 262200012, 1999-2004
Research leader: Honzík Jan M.
Team leaders: Češka Milan, Zendulka Jaroslav, Zezulka František

Co-operation

Co-operation in the Czech Republic
- Department of Computer Science and Engineering WBU in Plzeň, prof. Matoušek,

International Co-operation
- Universität Siegen in Siegen, Fakultät für Elektrotechnik und Informatik, Germany, prof. Dr.-Ing. Dr.h.c. K.W. Bonfig – study stays, diploma theses http://www.uni-siegen.de
- LIAFA (Laboratoire d’Informatique Algorithmique: Fondements et Applications), Université Paris 7 - Denis Diderot/CNRS, France, prof. A. Bouajjani - Methods for verification of parametric and infinite state systems http://www.liafa.jussieu.fr/
- Uppsala University, Department of Information Technology, Division of Computer Systems, Sweden, prof. P.A. Abdulla – Integration of tools for verification of parametric systems http://www.docs.uu.se
- Weizmann Institute of Science, Faculty of Mathematics and Computer Science, Rehovot, Israel, Dr. E. Sharar, D. Fisman – Integration of TLV among other tools for parametric verification http://www.weizmann.ac.il/

Visitors to the Department
- Dr. Peter Habermehl, LIAFA, Université Paris, a week stay, joint research in system verification
- Prof. Veljko M. Milutinovic, Department of Computer Engineering, University of Belgrade, a lecture
Visits of Staff Members to Foreign Institutions

- Češka Milan, prof. RNDr., CSc., Faculty of Electrical Engineering and Information Technology, Technical University, Košice, SK, 3 days
- Drahanský Martin, Ing., Universität Siegen, Siegen, DE, 17 months
- Drahanský Martin, Ing., Fraunhofer Gesellschaft – Institut für Graphische Datenverarbeitung, Darmstadt, DE, 6 days
- Krčena Bohuslav, Ing., Ph.D., Universita degli Studi di Milano - Bicocca; Dipartimento di Informatica, Sistemistica e Comunicazione; Laboratorio di Test e Analisi del Software, Universita degli Studi di Milano-Bicocca, Via Bicocca degli Arcimboldi 8, 20126, Milano, IT, 3 months
- Kunovský Jiří, doc. Ing., CSc., University of Malta, Malta, Hotel Kristal (a conference), MT, 11 days
- Rogalewicz Adam, LIAFA, Université Paris 7, one semestre study stay
- Vojnar Tomáš, Ing., Ph.D., Laboratoire d'Informatique Algorithmique: Fondements et Applications, Université Paris 7/CNRS, UMR 7089, LIAFA, 175 rue du Chevaleret, 75013 Paris 13, FR, 10 days
- Vojnar Tomáš, Ing., Ph.D., Laboratoire d'Informatique Algorithmique: Fondements et Applications, Université Paris 7/CNRS, UMR 7089, LIAFA, 175 rue du Chevaleret, 75013 Paris Cedex 13, FR, 10 days
- Vojnar Tomáš, Ing., Ph.D., Laboratoire d'Informatique Algorithmique: Fondements et Applications, Université Paris 7/CNRS, UMR 7089, London, Great Britain, and Paris, France, 14 days

Agreements

- An agreement on co-operation in research of automatic verification methods for systems with a complex and dynamically changing structure and for systems with advanced qualitative behaviour features between LIAFA, Université Paris 7 - Denis Diderot/CNRS (Prof. A Boujjani) and FIT BUT in Brno (Prof. M. Češka, Dr. T. Vojnar).
- A bilateral agreement on co-operation within the Socrates/Erasmus programme made with Universität Siegen, Germany
- A bilateral agreement on co-operation within the Socrates/Erasmus programme made with LIAFA, Université Paris 7.
Membership in Organizations and Societies

- Češka Milan, prof. RNDr., CSc.,
  - TC 10 IFIP Committee - Computer systems technology
  - IFIP WG 10.1 Computer Aided System Theory
  - Body of editors of the International Journal of General Systems, Gordon and Breach Science Publisher, USA
  - Research Board of Advisors, American Biographical Institute
  - Gesellschaft für Informatik, Germany
  - Czech and Slovak Simulation Society (CSSS) in the framework of EUROSIM
  - ACM

- Hanáček Petr, Dr. Ing.,
  - CIS (Czech and Slovak Information Society)
  - Czech and Slovak Simulation Society (CSSS)
  - ACM - SIGSAC - Special Interest Group on Security, Audit and Control
  - CEO (Centre for Electronic Commerce)

- Janoušek Vladimír, Ing., Ph.D.,
  - Czech and Slovak Simulation Society (CSSS)
  - Czech and Slovak Smalltalk Users Group (CSSUG)

- Jiří Kunovský, doc.Ing.,CSc.,
  - Czech and Slovak Simulation Society (CSSS)

- Peringer Petr, Dr. Ing.,
  - Czech and Slovak Simulation Society (CSSS)

- Rábová Zdeňka, doc. Ing., CSc.,
  - Committee of the Czech and Slovak Simulation Society (CSSS) in the framework of EUROSIM
  - AFCEA member

- Vojnar Tomáš, Ing., Ph.D.
  - Czech and Slovak Simulation Society (CSSS)

- Zbořil František, doc. Ing., CSc.,
  - Czech and Slovak Simulation Society (CSSS)
Publications

Books:

Book Chapters:


Journals:
Drahanský Martin, Smolík Luděk: Biometric Certificates, In: DSM Data Security Management, Vol. 8, No. 5, CZ, pp. 20-22, ISSN 1211-8737


Conferences:


Research Projects:


Křena Bohuslav: Preliminaries of Model Checking Based on Symbolic Execution, Milano, IT, DISCo, LTA, 2004, p. 28

Dissertations:

Hrubý Martin: An Environment for Modelling of Heterogeneous Systems, Brno, CZ, FIT BUT, 2004, p. 93


Křena Bohuslav: Analysis Methods of Object Oriented Petri Nets, Brno, CZ, 2004, p. 128


Presentations and Electronic Documents:
Martinek David: Do not make unnecessary mistakes in C language, Brno, CZ, 2004, p. 55
Martinek David: Do not make unnecessary mistakes!, Brno, CZ, 2004, p. 39

Seminars:

<table>
<thead>
<tr>
<th>Date</th>
<th>Presenter(s)</th>
<th>Title/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.2.2004</td>
<td>R. Kočí</td>
<td>PNtalk user’s guide</td>
</tr>
<tr>
<td>11.3.2004</td>
<td>M. Kovár</td>
<td>Topology and topology methods in theoretical informatics</td>
</tr>
<tr>
<td>20.5.2004</td>
<td>Prof. Kevin Warwick – a seminar</td>
<td></td>
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<tr>
<td>16.9.2004</td>
<td>V. Janoušek, R. Kočí, I. Schwarz</td>
<td>PNtalk workshop</td>
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<tr>
<td>20.9.2004</td>
<td>V. Janoušek, R. Kočí, I. Schwarz</td>
<td>PNtalk workshop</td>
</tr>
<tr>
<td>23.9.2004</td>
<td>V. Janoušek, R. Kočí, P. Slaviček, V. Florián, I. Schwarz</td>
<td>DEVS workshop</td>
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<tr>
<td>30.9.2004</td>
<td>R. Kočí</td>
<td>Open implementation of the PNtalk system and its application</td>
</tr>
<tr>
<td>7.10.2004</td>
<td>Nasibakhon Turakhojaeva</td>
<td>Petri nets for activity flow modelling in the workflow management systems</td>
</tr>
<tr>
<td>7.10.2004</td>
<td>F. Zbořil, Jr.</td>
<td>Formal models of agent systems and multi-agent systems</td>
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<tr>
<td>14.10.2004</td>
<td>B. Krčena</td>
<td>Analysis methods of object-oriented Petri nets</td>
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<tr>
<td>21.10.2004</td>
<td>I. Schwarz</td>
<td>Distributed PNtalk with object mobility</td>
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<tr>
<td>21.10.2004</td>
<td>R. Kočí</td>
<td>Demonstration of the PNtalk system</td>
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<tr>
<td>4.11.2004</td>
<td>L. Grulich</td>
<td>Artificial intelligence and simulation applied for decision support in microeconomic systems</td>
</tr>
<tr>
<td>11.11.2004</td>
<td>D. Šafránek</td>
<td>Visual coordination diagrams</td>
</tr>
<tr>
<td>18.11.2004</td>
<td>F. Orság</td>
<td>Biometrics systems and robotics</td>
</tr>
<tr>
<td>2.12.2004</td>
<td>P. Peringer</td>
<td>Scilab demonstration</td>
</tr>
</tbody>
</table>

Other activities

- Participation in organizing ISIM 2004, an international conference on theory, modelling techniques and tools, methods of information systems design and database systems.
- Participation in organizing MOSIS 2004, an international conference focused on simulation, esp. the theory, tools, methods and applications.
- Participation in organizing ASIS 2004, an international conference focused on simulation theory, tools, methods and applications.
• Membership of the CSSS (Czech and Slovak Simulation Society) Committee.
DEPARTMENT OF COMPUTER GRAPHICS AND MULTIMEDIA

The Department of Computer Graphics and Multimedia is responsible for teaching courses in the MSc. specialization called Computer Graphics and Multimedia, which covers computer graphics and multimedia, speech processing, human-machine interfaces, image and sound processing and compression, application interfaces for computer graphics and multimedia, and basics of applied computer graphics disciplines, such as computer-aided design (CAD), geographic information systems, etc. The Department of Computer Graphics and Multimedia is also responsible for teaching Signals and Systems, Computer Graphics Basics and Human-Machine Interface Design courses in Information Technology Bc programme.

Research activities of the Department are mainly focused on general computer graphics algorithms, rendering, processing and recognition of speech signals, animation in three-dimensional space, modern methods of human-machine interaction, image and signal processing, medical data processing, and on applications. The main research topics from the above activities are:

- Computer graphics algorithms accelerated using DSP and FPGA,
- perceptually-based robust feature extraction for speech and speaker recognition,
- very low bit rate coding,
- realistic rendering of complex scenes and volume rendering,
- automatic determination of speech units,
- large scale speech database collection,
- animation of articulated structures, kinematics and dynamics,
- medical data processing and visualization and human body modelling reconstruction from VH data sets,
- parallel rendering implementation of signal processing and graphics algorithms.

The lectures in most courses are supplemented with projects and laboratory sessions where the knowledge that students acquire during the lectures is further developed through practical experience and then practised in individually assigned projects and/or team projects. Most of the laboratory assignments and projects are platform-independent.

In case of complex tasks, which need specialized equipment, the necessary equipment, such as high performance Silicon Graphics graphic stations and specialized peripheries, is available.

Staff

Head of the Department
Zemčík Pavel, doc. Dr. Ing.

Deputy Head of the Department
Černocký Jan, doc. Dr. Ing.

Associate Professors
Černocký Jan, doc. Dr. Ing.
Zemčík Pavel, doc. Dr. Ing.

Research Worker
Janků Ladislava, Ing.

Assistant Professor
Burget Lukáš, Ing., Ph.D.
Herout Adam, Ing., Ph.D.
Kříšek Přemysl, Ing., Ph.D.
Motlíček Petr, Ing., PhD.

Assistant Lecturer
Dobšík Martin, Ing.

Technical Staff
Otáhalová Sylva

Ph.D. Students
Beran Vítězslav, Ing.
Grézl František, Ing.
Chalupniček Kamil
Chudý Robert, MgA.
Kadlec Jaroslav, Ing.
Karafiát Martin, Ing.
Matějka Pavel, Ing.
Pečíva Jan, Ing.
Potůček Igor, Ing.
Schwarz Petr, Ing.
Sumeč Stanislav, Ing.
Svojanovský Petr, Ing.
Szöke Igor, Ing.
Španěl Michal, Ing.

Equipment

- 3D Minolta VIVID 800 scanner for automatic scanning of objects up to the size of 1x1x1m with a computer-controlled revolving table for manipulation with the scanned objects. The scanner is connected to the Silicon Graphics Octane workstation.
- Software called SPEL - Speech Processing Electronic Library specialized IEEE software for speech signal processing.
- CAMEA DX6 with DSP TI C6711 and FPGA Virtex E-300 for acceleration of graphical computing.
- CAMEA UNI1-P-VUT with DSP TI C6416 and FPGA Virtex II-500 for acceleration of raster image processing.
- Equipment for meeting recording with a camcorder, hyperbolic mirror (for 360 angle), four microphones, and a notebook.

Tuition

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Course</th>
<th>Sem</th>
<th>Cr. Hours</th>
<th>Lecturer</th>
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<tbody>
<tr>
<td>CZR</td>
<td>Digital Speech Processing</td>
<td>L</td>
<td>6 26-3-0-24-12</td>
<td>Černocký Jan, doc. Dr. Ing.</td>
</tr>
<tr>
<td>MMD</td>
<td>Advanced Methods of 3D Scene Visualisation</td>
<td>Z</td>
<td>0 39-0-0-0-0</td>
<td>Zemčík Pavel, doc. Dr. Ing.</td>
</tr>
<tr>
<td>MZD</td>
<td>Modern methods of speech processing</td>
<td>L</td>
<td>0 39-0-0-0-0</td>
<td>Černocký Jan, doc. Dr. Ing.</td>
</tr>
</tbody>
</table>

66
Research Projects

*Research leader:* Heřmanský Hynek
*Team leaders:* Burget Lukáš, Černocký Jan, Grézl František, Kadlec Jaroslav, Karafiát Martin, Karafiát Martin, Matějka Pavel, Motlíček Petr, Potůček Igor, Schwarz Petr, Sumec Stanislav, Španěl Michal, Zemčík Pavel

*Research leader:* Novotný Jiří
*Team leaders:* Čejka Rudolf, Fučík Otto, Kořenek Jan, Martinek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Vojnar Tomáš, Zemčík Pavel

*Team leader:* Zemčík Pavel

**Recognition of Keywords and Actions in Meeting Data**, CESNET, 119/2004, 2004-2006
*Research leader:* Motlíček Petr
*Team leaders:* Karafiát Martin, Kašpárek Tomáš, Sumec Stanislav

**Collaborative virtual environments**, CESNET, 049/2003, 2003-2004
*Research leader:* Zemčík Pavel
*Team leaders:* Kašpárek Tomáš, Kršek Přemysl
Data driven and anthropic coding and recognition of speech, GAČR, GA102/02/D108, 2002-2005  
**Research leader:** Černocký Jan

**Voice technologies for support of information society**, GAČR, GA102/02/0124, 2002-2004  
**Research leader:** Černocký Jan  
**Team leaders:** Burget Lukáš, Grézl František, Karafiát Martin, Motlíček Petr, Schwarz Petr

**Multi Modal Meeting Manager**, EU-HLT, IST-2001-34485, 2002-2005  
**Research leader:** Heřmanský Hynek  
**Team leaders:** Černocký Jan, Zemčík Pavel

**Development in area of creating FEM models of human tissues for biomechanics application**, GAČR, GA201/01/D141, 2001-2004  
**Research leader:** Kršek Přemysl

**Research in information and control systems**, CEZ MŠMT, MSM 262200012, 1999-2004  
**Research leader:** Honzík Jan M.  
**Team leaders:** Češka Milan,ZendulkaJaroslav, Zezulka František

**Co-operation**

**Co-operation in the Czech Republic**
- Faculty of Informatics MU Brno, doc. Karel Pala, Dr. Ivan Kopeček, Dr. Tomáš Staudek – co-operation in speech processing and computer graphics  
- VŠB-TU, Ostrava, Faculty of Electronics and Informatics, Dr. Arnošt Šarman – annual series of lectures given by the staff and Ph.D. students of ÚPGM, VŠB-TU – focus on computer graphics  
- Centre for Machine Perception, FELK ČVUT Praha, Dr. Jiří Matas – co-operation on image processing related to transport  
- ÚTIA Praha, Dr. Jaroslav Kadlec, Ing. Jan Schier - co-operation in the field of algorithm implementation for image processing in FPGA  
- Teaching hospital Fakultní nemocnice u Sv. Anny, Brno, Clinic of Imaging Methods, Head of the Clinic doc. MUDr. Petr Krupa – co-operation in the field of computer models of tissues.

**International Co-operation**
- University of Bristol, Bristol, UK, Department of Computer Science, Dr. Alan Chalmers – co-operation in the area of computer graphics, exchange of Ph.D. students  
- University of Surrey, Guildford, UK, Centre for Vision, Speech, and Signal Processing, prof. Josef Kittler, Dr. William Christmas – image processing, exchange of Ph.D. students  
- University of Helsinki, Helsinki, Finland, Laboratory of Computational Engineering, Prof. Mikko Sams, Dr. Michael Frydrych – co-operation in the area of man-machine communication, exchange of Ph.D. students  
- Lappeenranta University of Technology, Lappeenranta, Finland, prof. Heikki Kälviäinen, prof. Jan Voráček – image processing, exchange of students, and MSc.
Study in Finland within the framework of IMPIT Project (International Master’s Programme in Information Technology)

- University of Joensuu, Joensuu, Finland, Department of Computer Science, Prof. Jussi Parkkinen, Dr. Markku Hauta-Kasari – multispectral colour image processing, exchange of students
- Technische Universität Wien, Institut für Komputergrafik, Thomas Theußl – Annual international students’ seminar (Central European Seminar on Computer Graphics)
- Oregon Health and Science University, Oregon Graduate Institute, Oregon, USA, prof. Misha Pavel – speech processing, robust detection of phonemes, exchange of Ph.D. students
- Department of computer graphics and image processing, Faculty of Mathematics, Physics and Informatics, Comenius University, Bratislava, Slovak Republic, Dr. Andrej Ferko – Annual international students’ seminar CESC (Central European Seminar on Computer Graphics)

Visitors to the Department

- Dr. Heikki Kälviainen, Lappeeranta University of Technology, Lappeeranta, Finland, an exchange of teachers within the SOCRATES/ERASMUS programme, 2 days
- Dr. Markus Grabner, Technische Universität Graz, Graz, Austria, an exchange of teachers within the SOCRATES/ERASMUS programme, 3 days
- Assoc. Prof. Mike Eboueya, University of La-Rochelle, La-Rochelle, France, a visit within the SOCRATES/IP project, 5 days
- Prof. Steve Renalds, University of Edinburgh, Edinburgh, Great Britain, a visit related to the opposition proceeding of the doctoral thesis completed by Ing. L. Burget

Visits of Staff Members to Foreign Institutions

- Beran Vítězslav, Ing., ADVANCED VISUAL INTERFACES 2004, Gallipoli (Lecce), Italy, IT, 6 days
- Beran Vítězslav, Ing., Insititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4,Case Postale 592,CH-1920 Martigny, Switzerland, CH, 8 days
- Burget Lukáš, Ing., Ph.D., Insititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4,Case Postale 592,CH-1920 Martigny, Switzerland, CH, 4 days
- Burget Lukáš, Ing., Ph.D., Insititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4,Case Postale 592,CH-1920 Martigny, Switzerland, CH, 8 days
- Burget Lukáš, Ing., Ph.D., 8th International Conference on Spoken Language Processing, the International Convention Center Jeju (ICC Jeju)in Jeju Island, Korea, KR, 15 days
- Burget Lukáš, Ing., Ph.D., University of Sheffield, University of Sheffield, Western Bank, Sheffield S10 2TN, UK, GB, 4 days
• Černocký Jan, doc. Dr. Ing., Ecole Superieure d'Engenieurs en Electrotechnique et Electronique, Cité Descartes BP 99, 93162 Nois-le-Grand, FR, 5 days

• Černocký Jan, doc. Dr. Ing., Technischen Universität München, TUM, Arcis Straße 21, 80333 Munich, DE, 4 days

• Černocký Jan, doc. Dr. Ing., 4th International Conference on Language Resources and Evaluation, Centro Cultural de Belem, Lisabon, PT, 6 days

• Černocký Jan, doc. Dr. Ing., Insititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4,Case Postale 592, CH-1920 Martigny, Switzerland, CH, 4 days

• Černocký Jan, doc. Dr. Ing., 8th International Conference on Spoken Language Processing, the International Convention Center Jeju (ICC Jeju) in Jeju Island, Corea, KR, 9 days

• Černocký Jan, doc. Dr. Ing., Technischen Universität München, TUM, Arcis Straße 21, 80333 Munich, DE, 4 days

• Dobšík Martin, Ing., Helsinki University of Technology, P.O.Box 1000, FIN-02015 HUT, FINLAND, FI, 11 days

• Dobšík Martin, Ing., Polish-Japanese Institute of Information Technology, Warsaw, PL, 6 days

• Grézl František, Ing., In sititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4, CH-1920 Martigny, CH, 9 months

• Herout Adam, Ing., Ph.D., Spring Conference on Computer Graphics, Budmerice, SK, 3 days

• Herout Adam, Ing., Ph.D., Insititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4,Case Postale 592, CH-1920 Martigny, Switzerland, CH, 4 days

• Herout Adam, Ing., Ph.D., University of Bristol, Department of Computer Science, University of Bristol, Senate House, Bristol BS8 ITH, GB, 23 days

• Herout Adam, Ing., Ph.D., University of Bristol, Department of Computer Science, University of Bristol, Senate House, Bristol BS8 ITH, GB, 16 days

• Herout Adam, Ing., Ph.D., Polish-Japanese Institute of Information Technology,street Koszykowa 86, 02-008 Warsaw, PL, 4 days

• Herout Adam, Ing., Ph.D., University of Bristol, Department of Computer Science, University of Bristol, Senate House, Bristol BS8 ITH, University of Guildford, GB, 8 days

• Heřmanský Hynek, Prof., Dr.Eng., Technischen Universität München, TUM, Arcis Straße 21, 80333 Munich, DE, 4 days

• Janků Ladislava, Ing., Insititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4,Case Postale 592, CH-1920 Martigny, Switzerland, CH, 8 days
• Janků Ladislava, Ing., Auditory Scene Analysis and Speech Perception by Human and Machine, Hanse-Wissenschaftskolleg (HWK), Lehmkülenbusch 4, Delmenhorst, Germany, DE, 4 days

• Janků Ladislava, Ing., TNO TPD, Communications Department, Stieltjesweg 1,2628 CK Delft, NL, 2 days

• Jenderka Petr, Ing., Institut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4,Case Postale 592,CH-1920 Martigny, Switzerland, CH, 8 days

• Kadlec Jaroslav, Ing., Technischen Universität München, TUM, Arcis Straße 21, 80333 Munich, DE, 4 days

• Kadlec Jaroslav, Ing., Central European Seminar on Computer Graphics, Budmerice, SK, 3 days

• Kadlec Jaroslav, Ing., Institut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4,Case Postale 592,CH-1920 Martigny, Switzerland, CH, 4 days

• Karafiát Martin, Ing., Institut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4,Case Postale 592,CH-1920 Martigny, Switzerland, CH, 4 days

• Karafiát Martin, Ing., Institut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4,Case Postale 592,CH-1920 Martigny, Switzerland, CH, 12 days

• Karafiát Martin, Ing., University of Sheffield, University of Sheffield, Western Bank, Sheffield S10 2TN, UK, GB, 4 months

• Karafiát Martin, Ing., 8th International Conference on Spoken Language Processing, the International Convention Center Jeju (ICC Jeju)in Jeju Island, Corea, KR, 15 days

• Kršek Přemysl, Ing., Ph.D., Ecole Superieure d'Engenieurs en Electrotechnique et Electronique, Cité Descartes BP 99, 93162 Nois-le-Grand, FR, 5 days

• Kršek Přemysl, Ing., Ph.D., Université de La Rochelle, Université de La Rochelle, FR, 5 days

• Kršek Přemysl, Ing., Ph.D., Polish-Japanese Institute of Information Technology, street Koszykowa 86, 02-008 Warsaw, PL, 5 days

• Kršek Přemysl, Ing., Ph.D., Technische Universität Graz, Rechbauerstr. 12, 8010 Graz, AT, 5 days

• Matějka Pavel, Ing., Institut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4,Case Postale 592,CH-1920 Martigny, Switzerland, CH, 8 days

• Motlíček Petr, Ing., PhD., Technischen Universität München, TUM, Arcis Straße 21, 80333 Munich, DE, 4 days

• Motlíček Petr, Ing., PhD., Institut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4, Case Postale 592,CH-1920 Martigny, Switzerland, CH, 8 days

• Motlíček Petr, Ing., PhD., Technischen Universität München, TUM, Arcis Straße 21, 80333 Munich, DE, 4 days
• Pečiva Jan, Ing., Instititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4, Case Postale 592, CH-1920 Martigny, Switzerland, CH, 4 days

• Pečiva Jan, Ing., Instititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4, Case Postale 592, CH-1920 Martigny, Switzerland, CH, 4 days

• Pečiva Jan, Ing., The University of Twente, Drienerloolaan 5, Twente, NL, 3 days

• Potůček Igor, Ing., Computer Graphics International 2004, Hersonissos, Crete, GR, 6 days

• Potůček Igor, Ing., International Conference on Pattern Recognition, Cambridge, GB, 6 days

• Potůček Igor, Ing., Instititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4, Case Postale 592, CH-1920 Martigny, Switzerland, CH, 3 days

• Potůček Igor, Ing., Technischen Universität München, TUM, Arcis Straße 21, 80333 Munich, DE, 17 days

• Schwarz Petr, Ing., Instititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4, Case Postale 592, CH-1920 Martigny, Switzerland, CH, 8 days

• Schwarz Petr, Ing., University of Sheffield, University of Sheffield, Western Bank, Sheffield S10 2TN, UK, GB, 4 days

• Sumec Stanislav, Ing., Instititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4, Case Postale 592, CH-1920 Martigny, Switzerland, CH, 4 days

• Sumec Stanislav, Ing., Computer Graphics International 2004, Hersonissos, Crete, GR, 6 days

• Sumec Stanislav, Ing., University of Edinburgh, Institute for Communicating and Collaborative Systems, University of Edinburgh, 2 Buccleuch Place, Edinburgh EH8 9LW, GB, 7 days

• Sumec Stanislav, Ing., Instititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4, Case Postale 592, CH-1920 Martigny, Switzerland, CH, 3 days

• Sumec Stanislav, Ing., TNO TPD, Communications Department, Stieltjesweg 1, 2628 CK Delft, NL, 2 days

• Sumec Stanislav, Ing., Polish-Japanese Institute of Information Technology, street Koszykowa 86, 02-008 Warsaw, PL, 5 days

• Svojanovský Petr, Ing., Instititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4, CH-1920 Martigny, Switzerland, CH, 12 months

• Španěl Michal, Ing., Université de La Rochelle, Université de La Rochelle, FR, 5 days

• Španěl Michal, Ing., Instititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4, Case Postale 592, CH-1920 Martigny, Switzerland, CH, 4 days

• Zemčík Pavel, doc. Dr. Ing., Instititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Trone, 98, Brussels, BE, 2 days
• Zemčík Pavel, doc. Dr. Ing., Technical Educational Institute, Heracleion, Greece, Valladolid, Spain, ES, 5 days

• Zemčík Pavel, doc. Dr. Ing., Technischen Universität München, TUM, Arcis Straße 21, 80333 Munich, DE, 4 days

• Zemčík Pavel, doc. Dr. Ing., Spring Conference on Computer Graphics, Budmerice, SK, 3 days

• Zemčík Pavel, doc. Dr. Ing., Central European Seminar on Computer Graphics, Budmerice, SK, 1 day

• Zemčík Pavel, doc. Dr. Ing., Insititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Simplon 4, Case Postale 592, CH-1920 Martigny, Switzerland, CH, 2 days

• Zemčík Pavel, doc. Dr. Ing., Lappeenranta University of Technology, Skinnarilankatu 34, FIN-53850, Lappeenranta, FI, 7 days

• Zemčík Pavel, doc. Dr. Ing., Technischen Universität München, TUM, Arcis Straße 21, 80333 Munich, DE, 4 days

• Zemčík Pavel, doc. Dr. Ing., Insititut Dalle Molle d'Intelligence Artificielle Perceptive, Rue du Trone, 98, Brussels, BE, 2 days

• Zemčík Pavel, doc. Dr. Ing., Technische Universität Graz, Rechbauerstr. 12, 8010 Graz, AT, 5 days

**Agreements**

Co-operation agreements within the Socrates/Erasmus programme made with:

- Helsinki University of Technology, http://www.hut.fi/English/, Finland
- Lappeenranta University of Technology, http://www.lut.fi/english/html, Finland
- University of Joensuu, http://www.joensuu.fi/englishindex.html, Finland
- Universite la Rochelle, http://www.univ-lr.fr/, France
- Utrecht University, http://www.uu.nl/uupublish/homeuu/homeenglish/1757main.html, Netherlands
- Graz University of Technology, http://www.tugraz.at/, Austria
- University of Surrey, http://www.surrey.ac.uk, UK
- University of Bristol, http://www.bris.ac.uk/, UK
- Technological Educational Institute of Crete, http://www.teicrete.gr, Greece

**Membership in Organizations and Societies**

- Černocký Jan, doc. Dr. Ing.,
  - IEEE (Secretary of the Czech Section)
  - ISCA (International Speech Communication Association)
- Dobšík Martin, Ing.,
  - ACM,
  - SIGGRAPH
  - ISCA
  - Czech and Slovak Simulation Society (CSSS)
- Potúček Igor, Ing.,
  - Fgnet – IST-2000-26434 (Face and Gesture Recognition Working Group)
  - M4 – Multimodal Meeting Manager
  - AMI – Augmented Multi-party Interaction

Publications:

Journals:


Schwarz Petr, Matějka Pavel, Černocký Jan: Towards Lower Error Rates in Phoneme Recognition, In: Lecture Notes in Computer Science, Vol. 2004, No. 3206, DE, p. 8, ISSN 0302-9743


Conference Proceeding:
Potúček Igor, Rigoll Gerhard, Wallhoff Frank, Zobl Martin: Dynamic Tracking in Meeting Room Scenarios Using Omnidirectional View, Cambridge, GB, 2004, p. 4

Conference Contributions:


Burget Lukáš: Combination of Speech Features Using Smoothed Heteroscedastic Linear Discriminant Analysis, In: Proceedings of 8th International Conference on Spoken Language Processing, Jeju island, KR, 2004, p. 4


Jenderka Petr, Potuček Igor, Sumec Stanislav: Meeting recordings at Brno University of Technology, In: AMI/PASCAL/IM2/M4 Workshop, Martigny, CH, 2004, p. 3


Pečiva Jan: Collaborative Virtual Environments, In: Collaborative Virtual Environments, Martigny, Switzerland, CH, IDIAP, 2004, p. 1


**Research Projects:**

Motlíček Petr: Visual Feature Extraction for Phoneme Recognition of Meetings, Brno, CZ, 2004, p. 14

**Presentations and Electronic Documents:**

Karafiát Martin, Grézl František, Burget Lukáš: Combination of MFCC and TRAP features for LVCSR of meeting data, Martigny, CH, 2004, p.1

**Abstracts:**

Motlíček Petr, Burget Lukáš, Černocký Jan: Phoneme Recognition of Meetings Using Audio-Visual Data, AMI Workshop, Martigny, CH, 2004, p. 6


**Products:**

Medical Modelling System Transfer 3.0, 2004

**Author:** Kršek Přemysl

**Seminars:**

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tr>
<td>2004-05-07</td>
<td>Hardware Acceleration of Point-Based Computer Graphics – Adam Herout</td>
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<td>2004-05-07</td>
<td>Collaborative Virtual Environments – Jan Pečiva</td>
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<tr>
<td>2004-05-07</td>
<td>Human Parts Recognition and Tracking in Omni-Directional Images – Igor Potůček</td>
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<tr>
<td>2004-05-12</td>
<td>Lattice in Speech Recognition – Petr Jenderka</td>
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<td>2004-05-12</td>
<td>Phoneme Recognition Using Long Temporal Context – Petr Schwarz</td>
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<tr>
<td>2004-05-14</td>
<td>Feature-Based Face Detection – prof. Heikki Kalviainen, Lappeenranta University of Technology, Finland</td>
</tr>
<tr>
<td>2004-05-14</td>
<td>Wheels Detection Using Pattern Matching – Vítězslav Beran</td>
</tr>
<tr>
<td>2004-05-14</td>
<td>Automatic Video Editing – Stanislav Sumeč</td>
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<tr>
<td>2004-05-14</td>
<td>Visualization of Hierarchical Structures – Robert Chudý</td>
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<td>2004-05-14</td>
<td>Medical Data Segmentation – Michal Španěl</td>
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<tr>
<td>2004-06-02</td>
<td>Simulation of a Point-Based Hardware Acceleration Algorithm – Julien Reptin, ESIEE Amiens, France</td>
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<tr>
<td>2004-06-18</td>
<td>3D Web Technologies – Markus Grabner, TU Graz, Austria</td>
</tr>
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</table>
Other activities:
- “Laboratory of Medical Engineering Applications” was built and focused on generating 3D geometrical models of tissues from CT/MR data and on production of physical models of tissues under the leadership of Dr. Ing. P. Krška
DEPARTMENT OF COMPUTER SYSTEMS

Department of Computer Systems provides tuition in the MSc. specialization Computer Systems and Networks which covers processor and computer architecture, data transmission, communication protocols and computer networks, development of network-based, Internet, parallel and embedded applications, design of hybrid HW/SW systems and their specification, digital signal processing, design of specialized interfaces, including interfaces to the Internet. Besides, the Department is also in charge of teaching a number of courses in the Bachelor’s study programme Information Technology.

Research activities of the Department are focused on architecture of HW/SW of embedded systems, parallel performance prediction and tuning, specification and design of computer-based systems, embedded systems and their mutual communication. Other research topics are: image processing and applied genetic and evolutionary algorithms, including evolvable hardware.

The main areas of interest are the following:

- application-specific architectures: high-performance embedded systems, multiprocessor systems on a chip (MPSoC) and re-configurable systems,
- performance prediction and tuning of parallel applications (neural networks, large systems of linear equations, signal processing algorithms),
- evolvable digital architectures,
- formal approaches to digital circuit diagnostics,
- applied evolutionary algorithms, and
- diagnostics, testability and safety.

The lectures in most courses are supplemented with projects or laboratory sessions, where students acquire useful experience and skills with the latest software packages and hardware units (workstations, multiprocessor systems, workstation clusters, RT OS, design systems FPGA and the like), learn basics of teamwork and project management. For the most demanding projects there is access to the Supercomputing Centre of BUT possible.

Staff

Head of Department
Dvořák Václav, prof. Ing., DrSc.

Deputy Head of Department
Kotásek Zdeněk, doc. Ing., CSc.

Professors
Dvořák Václav, prof. Ing., DrSc.

Associate Professors
Drábek Vladimír, doc. Ing., CSc.
Kotásek Zdeněk, doc. Ing., CSc.
Linhart Miroslav, doc. Ing., CSc.
Schwarz Josef, doc. Ing., CSc.

Lecturers
Eysselt Miloš, Ing., CSc.
Fučík Otto, Dr. Ing.
Růžička Richard, Ing., Ph.D.
Sekanina Lukáš, Ing., Ph.D.
Strnadel Josef, Ing., Ph.D.

Ph.D. Students
Bidlo Michal, Ing.
Bilík Jiří, Ing.
Crha Luděk, Ing.
Faltýnek Pavel, Ing.
Herrman Tomáš, Ing.
Jaroš Jiří, Ing.
Koblíha Miloš, Ing.
Kořenek Jan, Ing.
Kubek Ján, Ing.
Kutálek Vladimír, Ing.
Martínek Tomáš, Ing.
Mika Daniel, Ing.
Ohlídal Miloš, Ing.
Pečenka Tomáš, Ing.
Škarvada Jaroslav, Ing.

Equipment

Laboratory of Embedded Systems
6 work sites equipped with FUJITSU DevKit16 for the development of advanced embedded applications including special peripheries in FPGA, and use of modern design systems “Processor Expert“, UNIS.

8 benches equipped with development kits HC11 EVBU for the development of simple embedded applications with the use of the most widely spread MCU Motorola.

20 benches equipped with development kits with HC08 microcontroller, FPGA, basic peripheries and interfaces for HW applications with Metrowerks CodeWarrior and Xilinx ISE Webpack - modern programmable support

1 bench with Celoxica RC-1000 PCI card (Xilinx FPGA Virtex 1000) for FPGA gate array design

Laboratory of DSP Systems
1 bench for developing DSP applications with DSP56000 processors, Motorola.

8 benches equipped with DSK6414 kits, Texas Instruments for work with high-performance VLIW DSP processors TMS320C6414.
Computer Peripheral Laboratory

The bench for tuition support and development of PC fieldbuses – a special adapter (developed at the FIT), PCI Spartan fieldbus development kit with FPGA, Agilent 32-channel logic analyser.

Input peripheral devices bench – a keyboard and its controller (a special-purpose setup for demonstration), tablet Genius NewSketch, desktop scanner HP 5300C.

Output peripheral devices bench – ink printer HP DesignJet 488CA with HPGL and PCL graphic languages, Roland x/y plotter with HPGL language.


Digital interfaces bench - cards for PC / devices with RS-232, RS-485, RS-422, GPIB.

External memory bench - interface and IDE a SCSI, SCSI-2 discs.

A bench for teaching kits development – memory programmer, programmable logic and processors Elnect LabProg 48LV, soldering station, measuring instruments and power sources.

Compound digital system laboratory

20 benches equipped with development kits for design and debugging of digital systems and their interface. Each bench contains a Motorola HC08LJ12 kit with a microcontroller including common peripheries and debugging interface, Xilinx Spartan 3 kit with a gate array and an interface with numerous analogue and digital inputs and outputs (Advantech PCI-1710 industrial card), further peripheries, a bread board, JTAG programmer and a power supply unit.

Tuition

<table>
<thead>
<tr>
<th>Abbr.</th>
<th>Course</th>
<th>Sem</th>
<th>Cr.</th>
<th>Hours</th>
<th>Lecturer</th>
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<tr>
<td>EVA</td>
<td>Applied evolution algorithms</td>
<td>L 6</td>
<td>39</td>
<td>0-0-8-18</td>
<td>Schwarz Josef, doc. Ing., CSc.</td>
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<tr>
<td>AMC</td>
<td>Applied microcomputers</td>
<td>L 6</td>
<td>26-0-26-0-13</td>
<td>Schwarz Josef, doc. Ing., CSc.</td>
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<tr>
<td>ARP</td>
<td>Computer architecture</td>
<td>Z 6</td>
<td>39-16-0-0-10</td>
<td>Dvořák Václav, prof. Ing., DrSc.</td>
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<td>CIO</td>
<td>Digital and impulse circuits</td>
<td>Z 6</td>
<td>26-14-0-12-13</td>
<td>Schwarz Josef, doc. Ing., CSc.</td>
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<td>ICI</td>
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<td>CZS</td>
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<td>EVD</td>
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<td>39-0-0-4-0</td>
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<td>LOS</td>
<td>Logical systems</td>
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<td>39-18-0-0-8</td>
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<td>IMP</td>
<td>Microprocessors and embedded systems</td>
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<td>6</td>
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<td>NCS</td>
<td>Modern design of digital systems</td>
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<td>6</td>
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<tr>
<td>INC</td>
<td>Design of digital systems</td>
<td>L</td>
<td>5</td>
<td>39-10-0-0-3</td>
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<td>NAV</td>
<td>Design of external adapters</td>
<td>Z</td>
<td>5</td>
<td>26-0-0-26-0</td>
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<td>INP</td>
<td>Design of computer systems</td>
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<td>INP</td>
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<td>5</td>
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<td>PDD</td>
<td>Parallel and distributed programming</td>
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<td>IPZ</td>
<td>Periferal devices</td>
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<td>PZ1</td>
<td>Peripheral devices 1</td>
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<td>6</td>
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<td>PZ2</td>
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<td>PTP</td>
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<td>PPP</td>
<td>Practical parallel programming</td>
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<td>P3X</td>
<td>Semester project (abroad)</td>
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<td>SZZ</td>
<td>Final state exam</td>
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<td>0-0-0-0-0</td>
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<tr>
<td>SZZ</td>
<td>Final state exam</td>
<td>L</td>
<td>0</td>
<td>0-0-0-0-0</td>
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<td>SOD</td>
<td>Fault-tolerant systems</td>
<td>Z</td>
<td>0</td>
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<td>SOP</td>
<td>Fault-tolerant systems</td>
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<tr>
<td>SOD</td>
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<td>IVH</td>
<td>VHDL Seminar (in the EU)</td>
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<td>ZPX</td>
<td>Professional training abroad</td>
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<tr>
<td>ZPX</td>
<td>Professional training abroad</td>
<td>L</td>
<td>5</td>
<td>0-0-0-0-0</td>
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</tr>
</tbody>
</table>
Research Projects

Research leader: Kotásek Zdeněk
Team leaders: Drábek Vladimír, Růžička Richard, Sekanina Lukáš, Strnadel Josef

New principles of system testing based on the Boundary Scan method, FRVŠ MŠMT, FR1701/2004/G1, 2004
Research leader: Tupec Pavel
Team leader: Kotásek Zdeněk

Programmable hardware, CESNET, CESNET 34602/2004, 2004-2010
Research leader: Novotný Jiří
Team leaders: Čejka Rudolf, Fučík Otto, Kořenek Jan, Martinek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Vojnar Tomáš, Zemčík Pavel

Rapid prototyping tools for development of HW-accelerated embedded image- and video-processing applications, GA AVČR, T400750408, 2004-2008
Team leader: Zemčík Pavel

Compound Laboratory for Computer Hardware Teaching, FRVŠ MŠMT, FR1687/2004/A, 2004
Research leader: Drábek Vladimír
Team leader: Růžička Richard

Formal approach to digital circuits test scheduling, GAČR, GA102/03/P176, 2003-2005
Research leader: Růžička Richard

Application design methods based on evolvable hardware, GAČR, GA102/03/P004, 2003-2005
Research leader: Sekanina Lukáš

Parallel system performance prediction and tuning, GAČR, GA102/02/0503, 2002-2004
Research leader: Dvořák Václav

Research in information and control systems, CEZ MŠMT, MSM 262200012, 1999-2004
Research leader: Honzík Jan M.
Team leaders: Češka Milan, Zendulka Jaroslav, Zezulka František

Co-operation

Co-operation in the Czech Republic

- Camea, s.r.o., Brno
- UNIS, s.r.o., Brno
- ASICentrum, Praha
- Institute of Informatics and Automation, AV ČR
• Department of Informatics FEI, Technical University of Mining and Metallurgy, Ostrava
• Computer Department FEL, Czech Technical University, Prague
• Department of Electrical Measurement, Technical University of Mining and Metallurgy, Ostrava
• Faculty of Mechatronics, Liberec University of Technology
• Faculty of Applied Sciences, University of West Bohemia, Plzeň
• Department of Computer Science, Masaryk University in Brno
• Cesnet

International Co-operation
• Institute of Informatics, Slovak Academy of Sciences
• Technical University in Tallin, Estonia
• Department of Informatics, University of Oslo, Norway
• Pennsylvania State University, The Behrend College, Erie, USA. The long-term co-operation with Dr. Ralph Ford resulted in an arrangement for his visit at the FIT in the summer semester of 2005, thanks to Dr. Fučík, Dr. Sekanina and doc. Zemčík, and at expense of Fulbright Fund
• Cell Matrix Corp., USA
• Technical University in Riga, Latvia
• University of Aveiro, Portugal
• University of Wyoming, USA
• Dept. of Statistics, Operational Research and Computing, La Laguna University, Tenerife, Spain
• Computational Laboratory (CoLab), Swiss Federal Institute of Technology (ETH) Zürich, Switzerland
• NASA Jet Propulsion Laboratory, Pasadena, USA

Visitors to the Department
• Prof. Francois Hesdin, ESIEE Amiens, France, 3rd June 2004, A presentation of the ESIEE Amiens School: Implementation of New Master’s Programmes

Visits of the Staff in Other Institutions

- Crha Luděk, Ing., The 7th IEEE Workshop on Design and Diagnostics of Electronic Circuits and Systems, Tatranská Lomnica, SK, 5 days
- Crha Luděk, Ing., The International Conference on Field-Programmable Logic and Applications, Antwerp, Belgium, BE, 5 days
- Crha Luděk, Ing., Slovak Academy of Sciences, Kaštieľ Moravany nad Váhom, SK, 3 days
- Drábek Vladimír, doc. Ing., CSc., The 7th IEEE Workshop on Design and Diagnostics of Electronic Circuits and Systems, Tatranská Lomnica, SK, 5 days
- Drábek Vladimír, doc. Ing., CSc., Informatics and Information Technology, Tajovského 40, 974 00 Banská Bystrica, SK, 3 days
- Drábek Vladimír, doc. Ing., CSc., A workshop and seminar for Ph.D. students of Computer Architecture and Diagnostics, 2004, Kaštiel Moravany nad Váhom, Slovakia, SK, 3 days
- Drábek Vladimír, doc. Ing., CSc., Riga Technical University, Jurmala, LV, 5 days
- Dvořák Václav, prof. Ing., DrSc., 3rd International Conference on Networking, Creole Beach Hotel, Gosier, GP, 9 days
- Dvořák Václav, prof. Ing., DrSc., Faculty of Electrical Engineering and Informatics Slovak Technical University in Bratislava, Slovakia, Bratislava, SK, 1 day
- Jaroš Jiří, Ing., Slovak Academy of Sciences, Kaštieľ Moravany nad Váhom, Slovakia, SK, 3 days
- Kořenek Jan, Ing., XXV. Autumn Conference Europen, Klášter premostrátů, Teplá u Mariánských lázní, CZ, 2 days
- Kotásek Zdeněk, doc. Ing., CSc., Slovak Academy of Sciences, Bratislava, Slovakia, SK, 3 days
- Kotásek Zdeněk, doc. Ing., CSc., The 7th IEEE Workshop on Design and Diagnostics of Electronic Circuits and Systems, Slovak Academy of Sciences, Hotel ACADEMIA, Stará Lesná, Slovakia, SK, 5 days
- Kotásek Zdeněk, doc. Ing., CSc., IEEE European Test Symposium, Ajaccio, Korsika, FR, 6 days
- Kotásek Zdeněk, doc. Ing., CSc., A workshop and seminar for Ph.D. students of Computer Architecture and Diagnostics, 2004, Kaštiel Moravany nad Váhom, Slovakia, SK, 3 days
- Kutálek Vladimír, Ing., Slovak Academy of Sciences, Kaštieľ Moravany nad Váhom, SK, 3 days
- Kutálek Vladimír, Ing., Slovak Academy of Sciences, Smolenice Castle, Congress Centre of the Slovak Academy of Sciences, SK, 5 days
- Linhart Miroslav, doc. Ing., CSc., University of Žilina, Žilina, Slovakia, SK, 1 day
- Martínek Tomáš, Ing., The International Conference on Field-Programmable Logic and Applications, Antwerp, Belgium, BE, 5 days
- Martínek Tomáš, Ing., XXV. Autumn Conference Europen, Klášter premostrátů, Teplá u Mariánských lázní, CZ, 2 days
- Mika Daniel, Ing., The 7th IEEE Workshop on Design and Diagnostics of Electronic Circuits and Systems, Stará Lesná, Tatranská Lomnica, SK, 5 days
- Mika Daniel, Ing., Slovak Academy of Sciences, Kaštieľ Moravany nad Váhom, SK, 3 days
- Ohlídal Miloš, Ing., Slovak Academy of Sciences, Kaštieľ Moravany nad Váhom, SK, 3 days
- Pečenka Tomáš, Ing., The 7th IEEE Workshop on Design and Diagnostics of Electronic Circuits and Systems, Stará Lesná, Tatranská Lomnica, SK, 5 days
- Pečenka Tomáš, Ing., Fakulta elektrotechniky a informatiky, Technical University of Košice, Herľany, SK, 3 days
- Pečenka Tomáš, Ing., Slovak Academy of Sciences, Kaštieľ Moravany nad Váhom, SK, 3 days
- Růžička Richard, Ing., Ph.D., Institute of Informatics, Slovak Academy of Sciences, Congress Centre Academia in Stará Lesná, Tatranská Lomnica, Slovakia, SK, 5 days
- Růžička Richard, Ing., Ph.D., Institut de recherche en informatique et systemes aléatoires, IRISA/INRIA Rennes, Campus Universitaire de Beaulieu, Avenue de Général Leclerc, 35042 Rennes Cedex – France, FR, 6 days
- Růžička Richard, Ing., Ph.D., Fakulta elektrotechniky a informatiky, Technical University of Košice, Herľany, SK, 3 days
- Růžička Richard, Ing., Ph.D., Slovak Academy of Sciences, Kaštieľ Moravany nad Váhom, Slovakia, SK, 3 days
- Růžička Richard, Ing., Ph.D., 5th Workshop on RTL and High Level Testing, International House, Osaka 8-2-6 Uehonmachi Tennojiku Osaka, Japan, JP, 5 days
- Sekanina Lukáš, Ing., Ph.D., 1st European Workshop on Hardware Optimisation, Coimbra University, Portugal, PT, 6 days
- Sekanina Lukáš, Ing., Ph.D., The 7th IEEE Workshop on Design and Diagnostics of Electronic Circuits and Systems, Stará Lesná, Tatranská Lomnica, SK, 5 days

- Sekanina Lukáš, Ing., Ph.D., Jet Propulsion Laboratory, Los Alamos, Pasadena, US, 3 months

- Schwarz Josef, doc. Ing., CSc., Slovak Academy of Sciences, Moravany nad Váhom, SK, 3 days

- Strnadlo Josef, Ing., Ph.D., Institute of Informatics, Slovak Academy of Sciences, Dúbravská cesta 9, 842 37 Bratislava, SK, 1 day

- Strnadlo Josef, Ing., Ph.D., Slovak Academy of Sciences, Kaštieľ Moravany nad Váhom, SK, 3 days

- Strnadlo Josef, Ing., Ph.D., ISoLA - 1st International Symposium on Leveraging Applications of Formal Methods, Paphos, CY, 5 days

### Membership in Organizations and Societies

- Drábek Vladimír, doc. Ing., CSc.,
  - Czech Society for Cybernetics and Informatics
  - Czech Electrical Engineering Society
  - Czech and Slovak Simulation Society (CSSS)
  - EvoNet - The European Network of Excellence in Evolutionary Computing

- Dvořák Václav, prof. Ing., DrSc.,
  - IEEE - Computer Society, since 1991
  - Editorial Board JUCS, Journal of Universal Computer Science, since 1994
  - Editorial Board JEE - Journal of Electrical Engineering (Bratislava, Slovakia), since 1996

- Kotásek Zdeněk, doc., Ing., CSc.,
  - IEEE - Computer Society, since 2003
  - Member of the Opposition Board for ITEA – EMPRESS Project
  - Member of the Electronics and Cybernetics Subcommittee of the Grant Agency CR
  - Member of the Technical Sciences Committee of the Grant Agency CR
  - Member of the FRVŠ A Subcommittee
- Eysselt Miloš, Ing., CSc.,
- Fučík Otto, Dr. Ing.,
  - IEEE - Computer Society, since 1998
- Růžička Richard, Ing., Ph.D.,
  - EvoNet - The European Network of Excellence in Evolutionary Computing
  - IEEE member
- Sekanina Lukáš, Ing., Ph.D.,
  - EvoNet - The European Network of Excellence in Evolutionary Computing
  - IEEE member
  - Czech Society for New Materials and Technology – Nano-science and Nanotechnology
- Schwarz Josef, doc. Ing., CSc.,
  - Czech and Slovak Simulation Society (CSSS)
  - EvoNet - The European Network of Excellence in Evolutionary Computing
  - IEEE – Computational Intelligence Society, 2004
  - Chairman of the Opposition Board to the Kontakt MŠMT ME 526 Project
- Strnadl Josef, Ing., Ph.D.,
  - IEEE, since 2004

Publications

Chapters in Books:


Journals:


Conference Proceedings:


Conference Articles:


Teaching Texts:

Software:
Strnadel Josef, Kotásek Zdeněk: System ScanEduTool, a didactic instrument for education of scan technique principles, Brno, CZ, FIT BUT, 2004

Manuals:
Eysselt Miloš: Study Programme at the Faculty of Information Technology, IT - Information Technology: Follow-Up Master Study, MJ servis s r.o., Brno, CZ, FIT BUT, 2004, p. 16


Eysselt Miloš: Study Programmes at the Faculty of Information Technology: IT - Information Technology, Review Booklet/Brochure, MJ servis s r.o., Brno, CZ, 2004, p. 28

Dissertations:
Staroba Jiří: Parallel Performance Modelling, Prediction and Tuning, Brno, CZ, 2004, p. 83

Strnadel Josef: Testability Analysis and Improvements of Register-Transfer Level Digital Circuits, Brno, CZ, 2004, p.150
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>27.2.2004</td>
<td>Genetic algorithms fast prototyping developmental tools - Ing. Jiří Jaroš</td>
</tr>
<tr>
<td>5.3.2004</td>
<td>Evolution of combinational circuits – the first circuits evolved in the Czech Republic in a physical device - Ing. Štěpán Friedl</td>
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<tr>
<td>12.3.2004</td>
<td>Evolutionary design of RTL benchmark circuits - Ing. Tomáš Pečenka</td>
</tr>
<tr>
<td>26.3.2004</td>
<td>A component detection-based system for sign detection and image compression in FPGA - Ing. Luděk Črha</td>
</tr>
<tr>
<td>2.4.2004</td>
<td>System simulations - Ing. Rudolf Čejka</td>
</tr>
<tr>
<td>9.4.2004</td>
<td>A formal approach to test controller synthesis - Ing. Richard Růžička, Ph.D.</td>
</tr>
<tr>
<td>23.4.2004</td>
<td>Parallel performance modeling, prediction and tuning - Ing. Jiří Staroba</td>
</tr>
<tr>
<td>30.4.2004</td>
<td>SCAN-chain registers selection methods for test plan - Ing. Daniel Mika</td>
</tr>
<tr>
<td>7.5.2004</td>
<td>Advanced modular architectures for Linux kernel - Ing. Tomáš Kašpárek</td>
</tr>
<tr>
<td>14.5.2004</td>
<td>New approaches to testing of RTL FPGA circuits by means boundary scan elements - Ing. Pavel Tupec</td>
</tr>
<tr>
<td>3.11.2004</td>
<td>PhD study program: Information for new students - Ing. Richard Růžička, PhD.</td>
</tr>
<tr>
<td>10.11.2004</td>
<td>Introduction of new PhD students: Bidlo Michal, Bílík Jiří, Faltýnek Pavel</td>
</tr>
<tr>
<td>26.11.2004</td>
<td>Introduction of new PhD students: Herrman Tomáš, Koblíha Miloš, Kubek Ján, Škarvada Jaroslav</td>
</tr>
</tbody>
</table>
Other activities:

The 11th Annual IEEE International Conference and Workshop on the Engineering of computer-based Systems, ECBS 2004, took place in the BUT Centre on 24th-27th May 2004. It was the first time this conference was held in a Central European or East European country. The previous conferences were held in Huntsville (Alabama, USA), in Lund (Sweden), Jerusalem, Washington, D.C., Edinburgh, etc. The fact that Brno had been chosen and the FIT entrusted with the conference organization in the year of our admission to the EU was significant for our joining both the European and world professional community. Both the content and organization of the conference were highly appreciated by the guests.

Prof. Miroslav Švéda (FIT UPSY) was the director of the conference, prof. Václav Dvořák (FIT UPSY) was the Chairman of the Programme Committee and Dr. Lukáš Sekanina and Dr. Richard Růžička were the leaders of the Organization Committee.

- Kotásek Zdeněk, Doc., Ing., CSc., Head of a section at the IEEE DDECS Conference, on 18th – 21st April 2004
- Sekanina Lukáš, Ing., Ph.D.,
  - Invited paper Evolvable Hardware and Evolvable Computing, Pennsylvania State University, Erie, USA, on 18th November 2004
  - Invited paper Evolvable Hardware and Evolvable Computing, University of Arizona, Tucson, USA, on 16th November 2004
  - Invited paper Evolvable Hardware and Fulbright project with JPL – NASA JPL Lab, Pasadena, on 17th September 2004
  - Merit Award – Human-Competitive Awards in Genetic and Evolutionary Computation at 2004 Genetic and Evolutionary Computation Conference (GECCO-2004) in Seattle, USA
COMPUTER CENTRE

The Computer Centre is a self-contained part of the Faculty of Information Technology. It guarantees the running of computer laboratories, both local and faculty net, servers and information systems. The computer laboratories of the Centre are utilised both for scheduled tuition and for work on projects, diploma theses and research projects. Apart from the scheduled teaching hours the laboratories are open to all students of the FIT.

Staff

Head
Lampa Petr, Ing.

Deputy Head
Čejka Rudolf, Ing.

Centre Manager
Dupalová Helena

Systém Integrator
Gaďorek Petr, Ing.

Information System Administrator
Michal Bohumil, Ing.

Computer Network Administrator
Lampa Petr, Ing.

OS Administrator
Čejka Rudolf, Ing.
Kašpárek Tomáš, Ing.

Technical and Administrative Staff
Kappler Karel
Kreslík František, Ing.

Programmer
Skokanová Jana, Mgr.

Attendants
Habrdová Stella
Nečasová Milena
Nedělová Jana, Ing.
Pagová Ywetta
Samsonová Radomíra

Equipment

Teaching and Research Laboratories
- Laboratory with SUN Ultra 5 (10 workstations)
- Laboratories with personal computers and Windows XP/Linux systems (90 workstations)
- Multimedia laboratories equipped with 3D accelerators and Windows XP/Linux (22 workstations)
Open Computer Laboratories

- 2 unscheduled Internet laboratories open to all students of the Faculty (total of 42 computers + 10 connecting points for notebooks)
- WiFi net for access from students notebooks in the Centre as well as in lecture halls, library and other rooms.

Special Instrumentation and Computers

- IBM BladeCenter server with 12 modules each with two Intel Xeon 2.8GHz processors, 1 GB operational memory. The modules are linked to an internal gigabit switch and each of them has a capacity of a server.
- Three SuperMicro servers with RAID-5 disk arrays with a capacity of 5 TB, for speech signal storing and processing.
- Supermicro research server with 2 Intel Xeon processors 3.06 GHz and 2 GB oper. memory.
- Students’ server (Web, email, file server), 2 Intel Pentium III/800 MHz processors, 1.5 GB RAM, RAID-5 disk array with a capacity of 600 GB.
- Novell NetWare student and staff server with 2 Intel Xeon processors, 1 GB RAM, and RAID-5 of 800GB and 700GB capacity
- FTP archive with a RAID-5 disk array, 540 GB capacity.
- Computer network based on Ethernet gigabit switches at the 3rd level Extreme Networks Black Diamond 6808 and Summit 48. Most servers are connected by gigabit Ethernet.

Software

- Caché post-relational database system (a gift from InterSystems Corporation within the “Caché Campus Program”).
- Object-oriented CASE system Paradigm Plus by Computer Associates.
- OrCAD Caddence Design System
- FPGA and ASIC MentorGraphics ModelSim Design System
- Adobe Photoshop, Acrobat Distiller and Premiere, Autodesk 3D studio, Caligari TrueSpace.
- GNU Open Software, Mozilla, TeX, Linux, FreeBSD, MySQL, Apache, PHP4, etc.

Tuition

<table>
<thead>
<tr>
<th>Abbr</th>
<th>Course</th>
<th>Sem</th>
<th>Cr.</th>
<th>Hours</th>
<th>Lecturer</th>
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<tbody>
<tr>
<td>GUR</td>
<td>Graphical User Interface</td>
<td>Z</td>
<td>5</td>
<td>26-0-0-8-18</td>
<td>Lampa Petr, Ing.</td>
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<td>OS2</td>
<td>Operating Systems 2</td>
<td>L</td>
<td>6</td>
<td>39-0-0-8-18</td>
<td>Lampa Petr, Ing.</td>
</tr>
</tbody>
</table>
Research Projects

IT support on BUT, RP MŠMT, MŠMT 631/2004, 2004
Research leader: Marušínc Jaromír
Team leaders: Hažmuk Ivo, Krivánek Vítězslav, Lampa Petr, Záhořík Vladimír

Programmable hardware, CESNET, CESNET 34602/2004, 2004-2010
Research leader: Novotný Jiří
Team leaders: Čejka Rudolf, Fučík Otto, Kořenek Jan, Martinek Tomáš, Matoušek Petr, Pečenka Tomáš, Smrčka Aleš, Vojnar Tomáš, Zemčík Pavel

Recognition of Keywords and Actions in Meeting data, CESNET, 119/2004, 2004-2006
Research leader: Motlíček Petr
Team leaders: Karafiát Martin, Kašpárek Tomáš, Sumec Stanislav

Equipment of the FIT BUT Library, MŠMT, 2004-2006
Research leader: Lampa Petr

Collaborative virtual environments, CESNET, 049/2003, 2003-2004
Research leader: Zemčík Pavel
Team leaders: Kašpárek Tomáš, Kršek Přemysl

Online lecture streaming in high-speed network, CESNET, CESNET045/2003, 2003-2004
Research leader: Lampa Petr
Team leader: Michal Bohumil

Parallel system performance prediction and tuning, GAČR, GA102/02/0503, 2002-2004
Research leader: Dvořák Václav

Research in information and control systems, CEZ MŠMT, MSM 262200012, 1999-2004
Research leader: Honzík Jan M.
Team leaders: Češka Milan, Zendulka Jaroslav, Zezulka František

Visits of Staff Members to Foreign Institutions

- Kašpárek Tomáš, Ing., Slovak Academy of Science, Kaštieľ Moravany nad Váhom, SK, 3 days
- Lampa Petr, Ing., Teracue, Odelzhausen, Terracue, DE, 2 days
- Skokanová Jana, Mgr., Teracue, Odelzhausen, DE, 2 days

Membership in International Institutions and Societites

- Čejka Rudolf, Ing.,
  - Czech and Slovak Simulation Society (CSSS)
• Lampa Petr, Ing.,
  o Usenix
  o Sage

Publications

Conferences:


Other activities:

The Computer Centre co-operates with the CVIS BUT to develop the backbone BUT network, identity card systems, BUT information system and is in charge of certification authority at BUT.