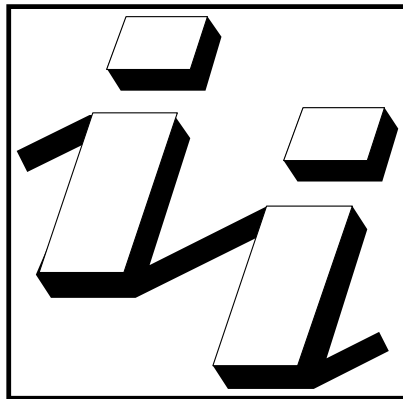




WARSAW UNIVERSITY OF TECHNOLOGY
FACULTY OF ELECTRONICS AND INFORMATION
TECHNOLOGY

**INSTITUTE OF COMPUTER SCIENCE
ANNUAL REPORT 2010**



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From the Director

The Institute of Computer Science is one of the very few academic institutions in Poland with the longest tradition in computer research & development as well as in education. The history of the Institute goes back to the year 1953 when the Division of Communications and Radio Equipment was established at the Faculty of Communications (was so called then). In 1960, the Division has designed and built one of the first industrially produced electronic computers in Poland, called UMC1. In 1970 the Division was transformed into Institute for Construction of Mathematical Machines. Finally, in 1975 the Institute was given its present name. From the very beginning up to 1978 the Division, and then Institute was headed by the late Professor Antoni Kiliński. In 1997 his professional contribution to the field of computers was posthumously honoured with “Computer Pioneer Medal” awarded by IEEE Computer Society.

Yet another person has significantly marked the history of the Institute – the pioneer of Polish Computer Science, late Professor Pawlak, well known worldwide as the one who created the Rough Sets Theory. It is worth noting that in early sixties of the last century he was one of the main contributors in constructing the first Polish computer UMC1. In the years 1989-1996 Professor Pawlak was Director of the Institute.

Many former staff members of the Institute and our alumni are employed by well known universities in USA, Europe and Australia.

The main activities of the Institute of Computer Science concentrate around teaching of undergraduate and graduate computer science students as well as doing research in the field of computer science. This Annual Report summarizes both types of the activities of the Institute, i.e. the teaching activities in the academic year 2009/2010, and the research activities in 2010.

Teaching in the field of computing and computers has started early in 60's, so that the first few M.Sc. degrees in Computer Science were granted in 1962. From then on the regular curricula in the field have been proposed. Our staff gives courses in English for the track in Electrical and Computer Engineering, offered by the Faculty of Electronics and Information Technology. Since 1995 the Institute has been running Evening Undergraduate Studies in Computer Engineering, with their own curriculum approved by the authorities of the Faculty. From 1999 on, the graduate level of evening studies is provided, and in 2001 first MSc degrees were granted. Also, since 1990 the Institute has organised (together with the Faculty's Institute of Telecommunications) a study for postgraduate students which offers courses in computer science, telecommunications and system management, called CITCOM. In 1994 the Institute's postgraduate studies in computer science for high school teachers have been organized. They are hold continuously up till now.

Now, each year some 80-90 students receive their BSc degrees, and 75-85 students are awarded MSc degrees. Additionally, we are proud of our PhD students, of whom some 3-6 obtain their Ph.D. degrees per year.

In order to keep in line with high education standards of the Institute and to upgrade our teaching processes, the Institute has successfully applied in 2008 for the project aiming at improving didactic offer and teaching methodologies to the current developments of the IT market. The project is funded by Foundation for the Development of the Education System.

The Institute's main research areas include computer graphics, information systems, data mining, artificial intelligence, computer systems' architectures, dependable computing and software engineering. With the acknowledged excellence of our research activities the main funds for research are obtained not only from the Polish governmental authorities responsible for scientific research, but also from EU Programmes and industry. In the framework of PF6 we have participated already in 2 projects. The cooperation with the industry has a long

tradition, going back to the pioneering works in 60-ties and 70-ties of the last century. In late 90-ties we have enjoyed a cooperation with Siemens, and ERA GSM. In 2005-2007 we cooperated with France Telecom, continuing it now with its Polish research branch CBR. We have also initiated a cooperation with UN organizations, in 2007 with UNEP, and in 2009 with FAO.

In 2010 we have continued our very successful cooperation with Samsung, and FAO. We have also essentially expanded our research activities. In particular, in 2010 we have started working on a strategic project SYNAT, which is devoted to the development of the infrastructure for scientific information in Poland.

Our cooperation with industry involves not only the Institute's academic staff but also our Ph.D. and MSc. students, who participate in the research projects. The outcome of the research run by the Institute staff is well reflected in our publication record. In 2010 our staff have authored and co-authored 93 publications (4 books, and 89 papers in international scientific journals, and conference proceedings, as well as chapters in the books).

The research achievements of the Institute's staff are well recognized in the academic community. Our colleagues are invited to the programme and organizing committees of international conferences. They are also often invited for reviewing papers for renowned international journals. It is my pleasure to express my appreciation to the Institute's staff for their efforts and contributions in the Institute's achievements in teaching and research.

Warsaw, January 2011

Henryk Rybiński

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1. GENERAL INFORMATION

1.1. Mission of the Institute

The Institute of Computer Science is one of the six institutes at the Faculty of Electronics and Information Technology, Warsaw University of Technology. The main activities of the Institute are teaching of undergraduate and graduate computer science students as well as research R&D projects in the field of computer science.

The Institute's main research areas include computer graphics, information systems, computer systems' architectures, dependable computing and software engineering. These research and teaching areas have influenced the organisation of the Institute: its staff is subdivided into three divisions, namely Computer Graphics, Information Systems, and Computer Architecture and Software Engineering. Each division has a dedicated set of computer facilities used for research by the Institute staff, and by students in performing their advanced projects, including the diploma projects. In addition to these three research laboratories and their specialised equipment and software, the Institute also has a common Computer Laboratory, which provides system resources, know-how and the organisational framework for the teaching process.

At the Faculty of Electronics and Information Technology the Institute is responsible for the teaching tracks in the field of computer science, including the track Electrical and Computer Engineering, which is provided in English. Our staff are involved in supervising the BSc, MSc, and PhD projects. In 2009/2010 there were 98 students awarded with BSc degree, 69 students awarded with MSc degree, and 3 PhD students awarded with PhD degree.

In 2011, 63 persons were employed in the Institute of Computer Science, including 47 scholars: 10 professors, 2 associate professors (this year, Piotr Gawrysiak has been awarded with habilitation), 23 assistant professors with a PhD degree, 6 assistants and 7 senior lecturers. The remaining employees are the engineers, laboratory and office staff.

1.2. Noteworthy events in '10

- ❑ On November 16th, 2010, Tomasz Gambin, our PhD student has been received the highest score in the competition for academic scholarships for PhD students of Warsaw University of Technology and awarded a prize of CAS/16/POKL.
- ❑ Tomasz Gambin was the winner of the competition for scholarships for young researchers organized by the Foundation for Polish Science under the START program, April 2010.
- ❑ On September 21st, 2010 the Polish Association for Image Processing - member society of IAPR, announced the result of its biennial contest for the best PhD thesis defended at Polish scientific institutions. Our former PhD student Dr. Jerzy Stachera was awarded a distinction for his thesis "Texture compression in real-time computer graphics applications". The supervisor of the thesis was Prof. Przemyslaw Rokita.
- ❑ The programming contests are organized at national and international level. International Collegiate Programming Contest traces its roots to competition held in 1970. Now it is organized under auspices of Association for Computing Machinery. The competition held in Poland is called Academic Championships in Collegiate Programming (Akademickie Mistrzostwa Polski w Programowaniu Zespołowym) and has been organized for 15 years. The rules for national and international contest are very similar. Students of our faculty participate in both contests. This year the

Academic Championships in Collegiate Programming were held in Poznań (5-6 November) and ACM Central Europe Programming Contest in Wrocław (19-21 November). Our team (Krzysztof Krygiel, Adam Mizerski, Krzysztof Kwapisiewicz, Jarosław Szcześniewski) competed with teams from Austria, Czech Republic, Croatia, Serbia, Slovakia, Slovenia, Hungary and Poland.

Local (at faculty level) programming contest has been organized for seven years in order to form a team which competes in national and international contests. The faculty programming contest was held on 16 October at the beginning of academic year. The participants tried to solve a set of 4 algorithmic problems within 3 hours time. The solutions were implemented in C/C++ language. The final rank was based on a number of accepted solutions and time needed to solve the problems. The local contest web site is available at following address: galera.ii.pw.edu.pl/konkurs/ (in Polish).

The faculty programming contest is organized by the staff members of Institute of Computer Science Andrzej Pająk and Zbigniew Szymański and with support of Andrzej Dominik, PhD student, who has created the software used during the contest.

- In 2010 Waldemar Grabski was a faculty coordinator of co-operation with secondary schools and a member of the Curriculum Council of the Open School of the Faculty of Electronics and Information Technology. As part of the Open School programme, members of the Institute gave two lectures: Jerzy Mieścicki, PhD, “*What people don't know about the information technology*”.

1.3. Board of Directors

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1.4. Organisation of the Institute

1.4.1. Division of Computer Graphics



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Jacek Raczkowski, PhD, Assistant Professor
Michał Rudowski, PhD, Assistant Professor
Janusz Rzeszut, PhD, Assistant Professor
Cezary Stepień, PhD, Assistant Professor
Rajmund Kożuszek MSc, Senior Lecturer
Grzegorz Mazur, MSc, Senior Lecturer
Henryk A. Kowalski, MSc, Senior Lecturer
Julian Myrcha, MSc, Senior Lecturer
Krzysztof Chabko, MSc, Senior R&D Engineer
Krzysztof Gracki, MSc, Senior R&D Engineer
Paweł Radziszewski, MSc, Senior R&D Engineer
Zbigniew Szymański, MSc, Senior R&D Engineer

Research profile: image generation and image processing: modelling and rendering, colour in computer graphics, modelling of natural phenomena and objects, real time image generation and processing (algorithms, hardware and software), virtual reality systems. Current research projects include:

- modelling and rendering of plants and their growth,
- colour spaces,
- applications of image processing methods in computer graphics,
- interaction in virtual reality systems,
- data visualisation,
- document processing,
- visualisation of fractal objects,
- compositing computer generated and real images,
- computer games.

Facilities: The computer facilities provided for CGD members and their students consist of many PC machines networked to the Institute's network. Graphics resources include stereoscopic viewing system, helmet VCR and other I/O devices (plotter, tablet, 3D scanner, colour frame grabber with a camera, Kodak 8660 Thermal Printer etc.). Several software systems are accessible on PCs (3DStudio, ModelView, PhotoStyler, PhotoShop, Corel Draw etc.).

Since 1993, in co-operation with Computer Science Committee of Polish Academy of Sciences, Computer Graphics Laboratory has been organising seminars entitled “Computer graphics, image processing and pattern recognition”. The seminars are held monthly during academic year and are open to the public. Lectures given by invited speakers cover broad range of image-related topics ranging from research and applications to technology and art. Seminar schedules are distributed to over 150 regular attendees and published on website together with short abstracts.

1.4.2. Division of Information Systems



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Jarosław Chudziak, PhD, Assistant Professor
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Przemysław Więch, MSc, Assistant
Patrycja Wegrzynowicz, MSc, Assistant
Piotr Parewicz, MSc, Senior Lecturer
Piotr Salata, MSc, Senior Lecturer

Research profile: practice and theory of information, database and knowledge systems as well as knowledge representation and discovery, data, text, spatial and Web mining, reasoning about knowledge, machine learning, natural language processing, rough sets, bioinformatics, multi-agent systems, mobile technology. Current research projects include:

- logical tools for semantic Web and databases,
- implementation of decision support systems,
- knowledge discovery, data, text, space, multimedia and Web mining,
- privacy preserving data mining,
- information retrieval and extraction,
- distributed default logics for reasoning in multi-agent systems,
- building and maintenance of ontologies,
- creation and maintenance of knowledge bases,
- modeling of scalable digital data repositories,

- automatic index selection in relational database management systems,
- analysis of genome data,
- application of developed software to vague data analysis and voice recognition.

Facilities: the computer facilities provided for ISD staff members and their students consist of 18 PC's, all integrated into Institute's network.

In 2010, a series of seminars was organized. The lectures were given both by the staff and Ph.D. students of Division of Information Systems, as well as the guests from other academic institutions. Since the SYNAT-PASSIM project granted by The National Centre for Research and Development (NCBiR) has been launched on August 16, 2010, in which the members of all three divisions of the Institute of Computer Science have been participating, the seminars have been held weekly.

1.4.3. Division of Computer Architectures and Software Engineering



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 Piotr Gawkowski, PhD, Assistant Professor
 Artur Krystosik, PhD, Assistant Professor
 Dariusz Turlej, PhD, Assistant Professor
 Jacek Wytrębowski, PhD, Assistant Professor
 Waldemar Grabski, MSc, Senior Lecturer

Research profile: system dependability (reliability, availability, performance, fault diagnostics and fault tolerance), advanced software engineering problems, software quality issues, advanced system and logical synthesis (reversible circuits), formal methods and tools for system design and verification, parallel processing architectures, local area networks, embedded and real-time systems. Current research projects include:

- testing and analysis of fault effects in computer systems (hardware and software), fault injection techniques, error detection and fault handling techniques,
- simulation techniques, modelling and formal methods for specification, design and verification of software, communication protocols, complex embedded systems, etc.,
- distributed system design problems, including multi-agent and SOA systems,
- modern technologies of software design and development, system life cycle, project management, model driven engineering, component based and aspect programming, data analysis tools, data mining applications.

Facilities: Division laboratory is equipped with Windows 2008 server, multiprocessor workstation (two dual core Opteron 280 processors - 4 cores, RAID 5 disk array, 8 GB ECC RAM), Dell 320 workstation and several PCs connected to local and faculty network. This equipment is designated for research purpose and students' projects as well. In addition to this there is a special stand for experiments with multi-agent systems (embodied agents represented by small mobile robots), real time systems and a simulation platform for tracing fault effects in computer systems. Various specialized software packages are available (locally and remotely) for research and educational purposes.

In 2010 a series of seminars has been organized devoted to dependable computing problems, embedded systems and software engineering. In particular they resulted in cooperation with other scientific groups (Institute of Control and Computation Engineering, Faculty of Transport) and industry (Samsung, Plum).

1.4.4. Computer Laboratory



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Activity profile: The Computer Laboratory provides computational facilities and services for both teaching and research carried out in the Institute. It consists of several laboratories dedicated to programming, hardware design, performing different software and hardware projects (i.e. diploma theses)

Facilities: The resources of the Computer Laboratory are closely integrated with other computer resources of the Institute (the research laboratories, staff-members' personal computers) into one, multiprotocol, heterogeneous network. This LAN consists of several main servers (SUN SPARC¹, IBM pSeries, LINUX, Windows Advanced Servers) and large number of PCs and workstations. All computers at the Institute have full access to the University's campus network and to the Internet.

The Software division of the Computer Laboratory supports various operating systems (AIX, Solaris, LINUX, Windows) and various applications (compilers, simulators, CASE tools, office programs, etc.) – including advanced software packages such as Visual.Net Studio, ORACLE RDBMS, IBM DB2, IBM Rational, Delphi, Eclipse, SQL Server, PowerBuilder, PowerDesigner, and many others.

The Hardware Division of the Computer Laboratory is equipped with specialised hardware development workstations, each consisting of a modular microprocessor/hardware assembly system (DSM, SML3), linked to a personal computer. Oscilloscopes and development systems for several types of microprocessor are provided as additional equipment.

As a result of cooperation with Texas Instruments, new equipment consisting of digital signal processors' development kits has been obtained. There are eZdsp6713 Kit, TMS320VC5505 DSP Evaluation Module, MSP430 USB Debugging Interface, MSP430F55xx USB 80-Pin Target board, F28035 Piccolo Experimenter's Kit, Delfino C28343 Experimenter's Kit, Delfino C28346 DIM168 Experimenter's Kit, C2000 Peripheral Explorer Kit, Dual Motor

¹ in Faculty's Laboratory

Control and PFC Developer's Kit and C2000 Renewable Energy Developer's Kit in laboratory linked to the computers with Code Composer Studio v4 software. This equipment is used for digital signal processor architecture and programming courses, preparation of BSc and MSc theses, research and scientific work in the field of real time systems and ECG signal analysis.

In 2007 the research resources of the Institute have been enhanced by two powerful multiprocessor servers (Sun X4600M2: 16-core; 32 GB RAM; and IBM p550: 8-core, 32 GB RAM). These servers cooperate with common disk matrices from Hitachi (capacity over 10TB) together with ambient switches and routers. Moreover, the Institute has been equipped with a comprehensive test system Agilent N2X, which is dedicated for validating the performance and scalability characteristics of next-generation network traffic and protocols. The equipment has been funded by Ministry of Science and Higher Education. The system is now widely used by the staff and graduate students of both our Institute, as well as, the Institute of Control and Computation Engineering.

2. STAFF

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2.5. Administrative staff



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3. TEACHING ACTIVITIES

3.1. Basic courses offered by the Institute

Each item listed below specifies the course title (e.g., Computer Architecture), its acronym or code (e.g., ARKO), number of hours per week (lecture, classes, laboratory, project hours respectively, e.g., '3-1-' means three hours of lecture per week, no classes, one hour of lab, and no project), its placement in the curriculum (e.g., 'undergraduate course for CSE students') and the name of the person(s) responsible for the course. Persons marked with an asterisk (*) are not employed in the Institute.

Undergraduate courses for CSE students

- [Edu1] Analysis of Algorithms (AAL, 2--2); Andrzej Pająk PhD
- [Edu2] Algorithms and Data Structures (AISDI, 211-); Roman Podraza PhD
- [Edu3] Basics of Computer Programming (PRI, 212-); Dobrowolski PhD
- [Edu4] Computer Architecture (ARKO, 3-1-); Grzegorz Mazur MSc, Dariusz Turlej PhD
- [Edu5] Computer Graphics (GKOM, 2-2-); Tenured Professor Jan Zabrodzki
- [Edu6] Computer Networks 2 (SKM2, 2-11); Jacek Wytrębowski PhD
- [Edu7] Compiling Techniques (TKOM, 2--2); Andrzej Pająk PhD, Iona Bluemke PhD
- [Edu8] Databases Systems (BD, 2-2-); Piotr Parewicz MSc, Roman Bembenik PhD
- [Edu9] Databases Systems (BD2, 2--1); Piotr Salata MSc
- [Edu10] Digital Electronics (ECY, 211-); Janusz Rzeszut PhD
- [Edu11] Digital Systems Design (PUCY, 2--1); Marek Pawłowski MSc
- [Edu12] Event-Driven Programming (PROZ, 2--2); Robert Podraza PhD
- [Edu13] Fundamentals of Digital Systems (PTCY, 2-2-); Andrzej Skorupski PhD*
- [Edu14] Interactive Applications Programming (PAIN, 2-1-); Waldemar Grabski MSc
- [Edu15] Internet Techniques (TIN, 2--1); Grzegorz Blinowski PhD, Piotr Gawkowski PhD, DSc, Paweł Radziszewski MSc
- [Edu16] Introduction to Computer Science (WI, 31--); Wiktor Daszczuk PhD
- [Edu17] Microprocessor Systems (TM, 2-2-); Jerzy Chrzęszcz PhD
- [Edu18] Object Oriented Programming (PROI, 2-2-); Andrzej Pająk PhD
- [Edu19] Operating Systems (SOI, 2-2-); Wiktor Daszczuk PhD
- [Edu20] Peripheral Devices and Interfaces (UZINT, 2-1-); Tenured Professor Janusz Sosnowski
- [Edu21] Software Engineering 2 (IOP2, 2-1-); Iona Bluemke PhD, Anna Derezińska PhD
- [Edu22] Systems and Networks Security (BSS, 2-1-); Professor Paweł Kerntopf
- [Edu23] Symbolic Data Processing Languages (JPS, 2--1); Piotr Parewicz MSc

Elective courses for CSE students

- [Edu24] Distributed Algorithms (AR, 2---); Jaromir Szeffer MSc*
- [Edu25] Data Warehouses (ZBD, 21--); Jarosław Chudziak PhD

- [Edu26] DSP Processors (PS, 2-11); Henryk Kowalski MSc
- [Edu27] Introduction to Text Data Exploration in WWW (WEDT, 2--1); Piotr Gawrysiak PhD, DSc
- [Edu28] ORACLE System Architecture and Database Administration (ORACL, 2-1-); Michał Rudowski PhD
- [Edu29] Rapid Application Prototyping Tools (NTR, 2-2-); Julian Myrcha MSc
- [Edu30] System's Programming in Windows NT (PWNT, 2--1); Artur Krystosik PhD
- [Edu31] UNIX System Architecture, Programming and Administration (UXP1A,2--1,); Grzegorz Blinowski PhD
- [Edu32] Introduction to Mobile Applications Programming (WPAM, 2--1); Piotr Gawrysiak PhD, DSc

Advanced courses (graduate level)

- [Edu33] Advanced Methods of Software Development (ZMWO, 2-1-); Ilona Bluemke PhD, Anna Derezińska PhD
- [Edu34] Advanced Topics in Data Base Systems (ZPBD, 2--1); Tenured Professor Henryk Rybiński
- [Edu35] Analysis and Design of Information Systems (APSI, 2--2); Piotr Salata MSc
- [Edu36] Data Mining Methods (MED, 2-11); Marzena Kryszkiewicz PhD, DSc
- [Edu37] Digital Image Processing (POBR, 2-11); Przemysław Rokita PhD, DSc
- [Edu38] Distributed Systems (SR, 2--1); Artur Krystosik PhD
- [Edu39] Fundamentals of Theoretical Computer Science (PTI, 21--); Professor Paweł Kerntopf, Professor Krzysztof Walczak
- [Edu40] Intelligent Information Systems (ISI, 2--1); Tenured Professor Mieczysław Muraskiewicz
- [Edu41] Pattern Recognition (ROB, 2-2-); Rajmund Kożuszek MSc
- [Edu42] Fuzzy Systems (SYROZ, 2--1); Professor Bohdan Butkiewicz

Courses for Evening Undergraduate Studies in Computer Science

- [Edu43] Administration of UNIX (UNIX, 1-1-); Zdzisław Michalski MSc*
- [Edu44] Algorithms and Data Structures (AISDA, 2-1-); Roman Podraza PhD
- [Edu45] Application Programming in Windows (PAW, 1-1-); Waldemar Grabski MSc
- [Edu46] CAD/CAM Systems (SYSCA, 1-2-); Professor Maciej Bossak^(*)
- [Edu47] Computer Architecture (AKO, 2-1-); Dariusz Turlej PhD
- [Edu48] Computer Graphics and Image Processing (GPOB, 2-2-); Tenured Professor Jan Zabrodzki
- [Edu49] Computer Networks (SIEKO, 2-2-); Jacek Wytrębowski PhD
- [Edu50] Computer Systems (SYSKO, 2---); Henryk Dobrowolski PhD
- [Edu51] Data Bases (BADA, 2-2-); Dominik Ryżko PhD
- [Edu52] Digital Integrated Circuits (CUS, 2-2-); Janusz Rzeszut PhD

- [Edu53] DTP Systems (SYDTP, 1-2-); Cezary Stępień PhD
- [Edu54] Fundamentals of Digital Technology (PTCYF, 2-2-); Andrzej Skorupski PhD*
- [Edu55] Hardware Project (PROJ2, ---2); Grzegorz Mazur MSc
- [Edu56] Introduction to Computer Science (WDI, 1---); Jerzy Mieścicki PhD*
- [Edu57] Microprocessor Systems (SYSMI, 2-2-); Jerzy Chrząszcz PhD
- [Edu58] Object Oriented Programming (PROGO, 2-2-); Rajmund Kozuszek MSc
- [Edu59] Operating Systems (SYSOP, 2-2-); Dariusz Turlej PhD
- [Edu60] Personal Computer (PCET, 1-2-); Grzegorz Mazur MSc
- [Edu61] Programming in Java (PROGC, 2-2-); Roman Podraza PhD
- [Edu62] Software Project (PROJ1, ---2); Ilona Bluemke PhD
- [Edu63] Software Tools and Systems (OUK, 1-3-); Zbysław Rozwadowski MSc*
- [Edu64] Software Technology (TPO, 2-2-); Iona Bluemke PhD, Anna Derezińska PhD
- [Edu65] Structured Programming in C (PROGP, 2-2-); Henryk Dobrowolski PhD

Courses for Evening Graduate Studies in Computer Science

- [Edu66] Advanced Programming (ZAAP, 2--1); Artur Krystosik PhD
- [Edu67] Analysis and Design of Information Systems (AIPSI, 2--2); Julian Myrcha MSc
- [Edu68] Artificial Intelligence Methods (MSZI, 2--1); Paweł Wawrzyński PhD*
- [Edu69] Computer Networks Security (BSK, 2-2-); Ryszard Kossowski PhD*
- [Edu70] Compiling Techniques (TEKO, 2--1); Andrzej Pająk PhD
- [Edu71] Dependable Computer Systems (WISK, 2--1); Tenured Professor Janusz Sosnowski
- [Edu72] Digital Image Processing (CPOM, 2-2-); professor Przemysław Rokita
- [Edu73] Digital Signal Processing (CPSM, 2-1-); Zbigniew Gajo PhD*
- [Edu74] Distributed Systems (SYRO, 2-1-); Professor Ewa Niewiadomska-Szynkiewicz*
- [Edu75] Fundamentals of Theoretical Computer Science (POTI, 21--); Professor Paweł Kerntopf
- [Edu76] Rapid Application Prototyping Tools (NRAD 2-2-); Julian Myrcha MSc

3.2. English language Computer Science Courses

The Institute of Computer Science provides the following courses to the students of English-language Electrical and Computer Engineering Studies. The course title, its code, the number of credit points and the name of the person responsible is given for each item.

- [Edu77] Algorithms and Data Structures (EADS, 211-) (E); Roman Podraza PhD
- [Edu78] Computer Architecture (ECOAR, 211-) (E); Grzegorz Mazur MSc
- [Edu79] Computer Graphics (ECOGR, 22--); Janusz Rzeszut PhD
- [Edu80] Computer Networks (ECONE, 2-2-) (E); Jacek Wytrębowski PhD
- [Edu81] Compiling Techniques (ECOTE 211-); Ilona Bluemke PhD
- [Edu82] Data Bases (EDABA, 211-); Tenured Professor Henryk Rybiński
- [Edu83] Data Mining (EDAMI, 2--2); Professor Marzena Kryszkiewicz

- [Edu84] Diploma Seminar (EDISE, -2--); Roman Podraza PhD
- [Edu85] Digital Signal Processor Architecture and Programming (EDSPA, 211-); Henryk Kowalski MSc
- [Edu86] Graphical User Interface (EGUI, 2--2); Michał Nowacki MSc*
- [Edu87] MSc Diploma Seminar (EMDS, ---2); Roman Podraza PhD
- [Edu88] Programming 3 (EPRO3, 2-2-); Roman Podraza PhD
- [Edu89] Software Engineering (ESOEN, 211-); Iona Bluemke PhD, Anna Derezińska PhD

3.3. Special courses

- [Edu90] Applied Problems of Physics, Postgraduate Studies For Teachers in Computer Science, Professor Jarosław Parka
- [Edu91] Algorithmic Problems and Programming in C++; Postgraduate Studies For Teachers in Computer Science, Andrzej Pająk PhD
- [Edu92] Computer Graphics; Postgraduate Studies For Teachers in Computer Science, Cezary Stępień PhD
- [Edu93] Computer Hardware; Postgraduate Studies For Teachers in Computer Science, Grzegorz Mazur MSc
- [Edu94] Data Bases; Postgraduate Studies For Teachers in Computer Science, Wojciech Kamiński MSc*
- [Edu95] Edition of School Internet Portals; Postgraduate Studies For Teachers in Computer Science, Zbigniew Szymański MSc
- [Edu96] Event Programming – Delphi; Postgraduate Studies For Teachers in Computer Science, Krzysztof Gracki MSc
- [Edu97] Final Project; Postgraduate Studies For Teachers in Computer Science, Tenured Professor Jan Zabrodzki
- [Edu98] Introduction to Computer Science; Postgraduate Studies For Teachers in Computer Science, Rajmund Kożuszek MSc
- [Edu99] Internet; Postgraduate Studies For Teachers in Computer Science, Paweł Radziszewski MSc
- [Edu100] Introduction to Java; Postgraduate Studies For Teachers in Computer Science, Roman Podraza PhD
- [Edu101] Linux Operating System; Postgraduate Studies For Teachers in Computer Science, Zbigniew Szymański MSc
- [Edu102] Multimedia; Postgraduate Studies For Teachers in Computer Science, Krzysztof Chabko MSc
- [Edu103] Programming C++/Delphi – Project; Postgraduate Studies For Teachers in Computer Science, Krzysztof Gracki MSc
- [Edu104] School Computer Network Administration; Postgraduate Studies For Teachers in Computer Science, Z. Szymański MSc
- [Edu105] Selected Problems of Mathematics, Postgraduate Studies For Teachers in Computer Science, Katarzyna Litewska PhD

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- [Edu106] Software Tools; Postgraduate Studies For Teachers in Computer Science, Rajmund Kożuszek MSc
 - [Edu107] Spreadsheets; Postgraduate Studies For Teachers in Computer Science, Professor Marzena Kryszkiewicz
 - [Edu108] Teaching Methods – Computer Science; Postgraduate Studies For Teachers in Computer Science, Zdzisław Nowakowski MSc
 - [Edu109] Teaching Methods – Information Technology; Postgraduate Studies For Teachers in Computer Science, Zdzisław Nowakowski MSc
 - [Edu110] Windows Operating System; Postgraduate Studies For Teachers in Computer Science, Krzysztof Chabko MSc
 - [Edu111] Word Processing and Desk Top Publishing; Postgraduate Studies For Teachers in Computer Science, Cezary Stępień PhD
 - [Edu112] Administration of Local Network, Postgraduate Studies in Computer Science, Krzysztof Chabko MSc
 - [Edu113] Basic Aspects of Telecommunications, Postgraduate Studies in Computer Science, Sławomir Kula PhD
 - [Edu114] Computer Graphics; Postgraduate Studies in Computer Science, Cezar Stępień PhD
 - [Edu115] Computer Architecture; Postgraduate Studies in Computer Science, Grzegorz Mazur MSc
 - [Edu116] Data Bases; Postgraduate Studies in Computer Science, Wojciech Kamiński MSc*
 - [Edu117] Edition of Internet Portals; Postgraduate Studies in Computer Science, Zbigniew Szymański MSc
 - [Edu118] Final Project; Postgraduate Studies in Computer Science, Tenured Professor Jan Zabrodzki
 - [Edu119] Introduction to Computer Science; Postgraduate Studies in Computer Science, Rajmund Kożuszek MSc
 - [Edu120] Internet; Postgraduate Studies in Computer Science, Paweł Radziszewski MSc
 - [Edu121] Introduction to C++ Programming; Postgraduate Studies in Computer Science, Roman Podraza PhD
 - [Edu122] Linux Operating System; Postgraduate Studies in Computer Science, Zbigniew Szymański MSc
 - [Edu123] Multimedia; Postgraduate Studies in Computer Science, Krzysztof Chabko MSc
 - [Edu124] Software Tools; Postgraduate Studies in Computer Science, Zbigniew Szymański MSc
 - [Edu125] Spreadsheets; Postgraduate Studies For Teachers in Computer Science, Professor Marzena Kryszkiewicz
 - [Edu126] Teaching Methods – Information Technology; Postgraduate Studies in Computer Science, Zdzisław Nowakowski MSc
 - [Edu127] Windows Operating System; Postgraduate Studies in Computer Science, Krzysztof Chabko MSc
 - [Edu128] Word Processing and Desk Top Publishing; Postgraduate Studies in Computer Science, Cezary Stępień PhD

4. RESEARCH PROJECTS

4.1. Projects granted by the University

4.1.1. Projects granted by the Dean of the Faculty of Electronics and Information Technology

- [Pro1] **Henryk Rybiński**, Professor – Head of the project: **“Development of new methods and algorithms in the following areas: (1) computer graphics, (2) artificial intelligence, and information systems; and (3) distributed systems”**, (in Polish – Rozwój nowych algorytmów w obszarach: grafiki komputerowej, sztucznej inteligencji, systemów informacyjnych oraz systemów komputerowych). 24 June 2010 – 31 December 2010.
- [Pro2] **Henryk Rybiński**, Professor – Head of the project: **“IT infrastructure for the Faculty of EIT**, (in Polish – Rozwój infrastruktury informatycznej Wydziału). 24 June 2010 – 31 December 2010. *Abstract*: The main goal of the project was to implement a generic information system, and apply it for building the Faculty information system. With the developed software, the following systems have been created for FEIT: the Faculty Repository for the staff publications, Repository of Doctoral Dissertations, Project Database. The new systems have been integrated with the Faculty portal.

4.1.2. Projects granted by the the Rector of Warsaw University of Technology

- [Pro3] **Tomasz Martyn**, Ph.D. – Head of the project: **“Visualization of IFS attractors: Problems and solutions”**, (in Polish – Problemy wizualizacji atraktorów odwzorowań iterowanych). 21 May 2010 – 31 December 2010. *Abstract*: The project concerns numerical problems underlying visualization of (with the focus on realistic visualization in real-time) fractal sets described by iterated function systems. Due to geometrical and topological complexity of the sets, the algorithms solving the problems are characterized by both high computational and space complexities. Therefore in order to attain results within limited time intervals (determined, for example, by real-time applications), the relevant computation usually should be done in a parallel manner taking advantage of a powerful CPU and many pipelines (GPU stream processors) of a modern graphics adapter.
- [Pro4] **Henryk Rybiński**, Professor – Head of the project: **“Design and implementation of a pilot repository system for theses (BSc MSc, PhD) and publications of the WUT staff”**, (in Polish – Projekt i implementacja pilotowego systemu repozytorium dla prac dyplomowych (inżynierskich, magisterskich i doktorskich) oraz publikacji pracowników Politechniki Warszawskiej). 15 April 2010 – 31 December 2010. *Abstract*: The aim of the proposal is to build a pilot version of an electronic repository of documents. The system will provide means for archiving the publications authored by the WUT researchers, as well as the theses prepared by the University students. The pilot version of the system will be used as a testbed for implementing the system covering all the faculties of the University in the future. It will simplify access to the publications and theses, it will also provide tools for organizing a workflow for the graduating processes. It will be a distributed system, run at particular faculties. The exchange of information between the subsystems will be based on harvesting of the resources, implemented by means of Open

Access Initiative. The integrated search portal will be implemented at the Main Library of WUT. Partners: The Faculty of Chemistry, the Faculty of Environmental Engineering, the Main Library.

4.2. Projects granted by the Ministry of Education and Science

- [Pro5] **Pawel Kerntopf**, Professor – Head of the project No. N N516 418038; 17 May 2010 – 16 November 2012, “**Synthesis of reversible logic circuits – new approaches and algorithms**”, (in Polish – Projektowanie odwracalnych układów cyfrowych – nowe koncepcje i algorytmy). *Abstract*: Development of algorithms for designing reversible digital circuits based on new concepts and determination of efficiency of these algorithms. It will be a continuation of previous theoretical research as well as construction of new design algorithms. Computer programs implementing developed algorithms will be written and then evaluated using benchmarks described in the literature. The results will include publications, two PhD theses and design tools for generating optimal circuits (for small number of variables) and quasi-optimal circuits (for large number of variables). Current results will be presented at international conferences and published in journals. A book describing state-of-the-art of designing reversible digital circuits, the first in Poland and one of a few in the world will be prepared. Collective project.
- [Pro6] **Marzena Kryszkiewicz**, Professor – Head of the project No. N N516 070437; 02 October 2009 – 31 October 2011, “**Privacy Preserving Classification and Association Rules Mining over Centralized Data**”, (in Polish – Zapewnianie prywatności w klasyfikacji i odkrywaniu reguł asocjacyjnych z wykorzystaniem danych scentralizowanych). *Abstract*: Nowadays large amounts of data can be collected and stored, thus data mining is used in almost every domain of our life. Nevertheless, users are afraid of revealing sensitive values about themselves, because provided data and hidden knowledge discovered by data mining can be misused. It makes gathering high quality data harder. The goal of preserving privacy is to encourage people to provide true information, even about sensitive values. It also enables organizations to provide data with the possibility to discover hidden knowledge from it, but without revealing the individual characteristics of the objects, i.e., customers. In privacy preserving, the information can be hidden either on an individual or aggregate level. In the former case, the individual characteristics about the objects are not revealed. In the latter, the knowledge which could be discovered by a data miner is hidden. One of the privacy preserving methods used for hiding information on the individual level is the value distortion. For continuous attributes, random noise is added to original values. For nominal attributes, the original values of attributes are changed according to a given probability distribution. Only distorted values are stored. The value distortion method enables a data miner to store data in a centralized database. This method causes trade-off between a privacy level and accuracy. The higher level of privacy, the lower accuracy of the results we have. It is a challenge for data miners. Thus, new more effective privacy preserving classification and association rules mining algorithms for centralized data will be proposed. Ordered attributes, meta-learning, and hierarchical combining of classifiers will be used to reduce accuracy loss. Moreover, the modification of the association rules mining algorithm shall reduce time complexity. The experimental system will be used to test new algorithms and

- compare them with the existing solutions. Participant: *Piotr Andruszkiewicz* PhD Student.
- [Pro7] **Henryk Rybiński**, Professor – Head of the project No. N N516 378136; 15 April 2009 – 30 May 2011, “**Distributed Default Reasoning in the Semantic Web**”, (in Polish – Rozproszone wnioskowanie w Sieci Semantycznej przy użyciu logiki domniemań). *Abstract*: The aim of the dissertation is to develop algorithms for distributed reasoning with description logics extended with default rules. A model of a multi-agent system will be designed, which takes advantage of DDDL (Distributed Description Logic with Defaults). A prototype system will be implemented in order to confirm the correctness and efficiency of the proposed solutions. Experiments will be conducted using the prototype system. Participant: *Przemysław Więch*, PhD Student.
- [Pro8] **Henryk Rybiński**, Professor – Head of the project No. N N516 378936; 15 April 2009 – 30 June 2011, “**Autonomic index selection in relational database management systems by evolutionary transformation of query execution plans**”, (in Polish – Autonomiczny dobór indeksów w systemach relacyjnych baz danych przy pomocy ewolucyjnego przekształcania planów wykonania zapytań). *Abstract*: Relational database management systems (RDBMS) have been under continuous development for over three decades. Their complexity makes the administration process requires much experience and highly specialized knowledge. Any methods for reducing the costs of administration are nowadays in great value. These methods usually employ some fully or partially autonomic components. One of the common tasks required for autonomic operation of the RDBMS is optimal index selection. The index selection process must not impose any significant runtime and memory overhead on the operation of the RDBMS. The state-of-the-art greedy index selection heuristics often do not provide solutions of sufficient quality, while the global optimization methods leveraging the “what-if” approach are not efficient enough in autonomic applications. The aim of the research is to create a method that provides better and faster autonomic index selection than the state-of-the-art algorithms. The method should be applicable to database workloads that change their characteristics over time. The preliminary experiments have shown that the evolutionary searching of the space of query execution plans (as opposed to commonly used searching of the space of index configurations) yields fast convergence to good solutions. The proposed algorithms will be theoretically analyzed, implemented in Java and experimentally evaluated for various real-world and synthetic database workloads. The results will be compared to the methods currently used in commercial RDBMS. Participant: *Piotr Kołaczkowski* PhD Student.
- [Pro9] **Henryk Rybiński**, Professor – Head of the project No. N N516 432738; 20 April 2010 – 10 May 2011, “**A hybrid method of indexing multiple-inheritance hierarchies in ontology**”, (in Polish – Hybrydowa metoda indeksowania hierarchii dziedziczenia wielokrotnego w ontologiach). *Abstract*: The problem of efficient processing of the basic operations on ontologies, such as subsumption checking, or finding all subtypes of a given type, becomes of a very high importance. Currently, there are two main approaches addressing this issue. The first one uses numbering schemes, which are particularly effective in plain hierarchies having a mean number of parents per node close to one. The second approach bases on gene

inheritance and it is especially useful for complex hierarchies which are not too deep. Our approach combines these two methods mentioned above, to achieve a better functionality and performance in terms of consumed memory and time required to search through and update the hierarchy. A significant advantage of our solution is its effectiveness independence of a hierarchy structure properties.

The aim of the project is to create a set of algorithms performing all needed operations, such as finding the latest common descendant or the greatest common ancestor, collecting all ancestors or descendants of a particular node, testing for inheritance relation between two nodes, as well as incremental encoding (updating, deleting and inserting nodes without recoding whole hierarchy). Participant: *Jacek Lewandowski* PhD Student.

- [Pro10] **Dominik Ryzko**, PhD – Head of the project No. 1274/GG 7.PR UE/2010/7; 29 April 2010, Preparation of a proposal for FP7 call 5 titled “**Service Delivery manager for Ubiquitous Computing Environments enabled by context monitoring and analysis (SEDUCE)**”, *Description*: The project was performed under “Grants for grants” funding scheme of the Polish Ministry of Science and Higher Education. Its goal was to deliver a proposal for FP7 call 5, ICT-2009.1.3 Internet of things and Enterprise environment. Project activities included: building and coordinating international consortium of scientific and industry partners; development of project concept and goals; defining work packages, tasks and deliverables; creating project work plan and budget; defining current state of the art and innovative elements of the project etc. The proposal was delivered on time and fulfilled all formal requirements. The reviewers considered it relevant to the call and proposed very good marks for its evaluation, but despite being placed high in the ranking list just missed the funding due to very tough competition.
- [Pro11] **Janusz Sosnowski**, Professor – Head of the project No. 4297/B/T02/2007/33; 8 October 2007 – 7 October 2010, “**Developing a methodology of evaluating computer system reliability and performance**”, (in Polish – *Rozwój metodyki oceny niezawodności i wydajności systemów komputerowych*). *Abstract*: The project relates to dependable computing problems. The planned research is aimed at developing a special software environment for the analysis of critical problems in computer systems, validating its behaviour, etc. In particular we will develop efficient fault injection tools, which will allow analysing fault effects in real applications. The theoretical ideas and developed tools will be verified for various classes of applications (calculation oriented and real-time). The developed simulation environment will be enhanced with various statistical tools co-operating with system logs, etc. The developed tools will be used to optimise test scenarios, reliability and availability. New error detection and error handling techniques will be proposed and verified. To verify the proposed methodology and developed tools we will create a benchmark of various applications covering different operational and performance profiles. For these applications we will generate representative input data, checked with various coverage analyses (including program mutation techniques). Various measures to evaluate different properties of software applications will be proposed. This research will be extended with a new methodology of collecting data on reliability and performance of computer systems (data exploration and statistical correlations analysis techniques). Collective project.

- [Pro12] **Krzysztof Walczak**, Professor – Head of the project No. N N516 531839; 22 September 2010 – 21 September 2011, “**Design of experiments and genomic data analysis in array-based CGH technology**”, (in Polish – Projektowanie eksperymentów i analiza danych genomowych w technologii mikromacierzy CGH). *Abstract*: The goal of the project is development of new algorithms for experiments made in aCGH technology (array-based Comparative Genomic Hybridization). aCGH was invented for high resolution detection of genomic copy number variations. This technology is commonly used in medicine, e.g. for discovering associations between diseases and DNA aberrations, as well as in diagnosis of genomic diseases. The project will focus on designing experiments and aCGH results processing. The PhD thesis will describe bioinformatics tools that are developed to support different stages of aCGH data processing. There will be presented conclusions pertaining to the process of designing CGH microarrays, which includes sequence analysis, probes selection and designs comparison. The proposals for new algorithms will be discussed in details in the context of existing solutions. Apart from experiment designs, the special attention will be devoted to the algorithms used for experiment results analysis. One of the most important stage in the data analysis is a process called segmentation, in which the aberrated regions in genome are detected. Next data with annotated regions can be used for classification in order to support the diagnosis. The thesis will present different approaches of experimental data processing. There will be described methods from the field of data mining and artificial intelligence, including Jumping Emerging Patterns (JEP), Hidden Markov Models(HMM) and Bayesian models. New algorithms will be compared to previously proposed methods. Finally, there will be shown a complete system for the analysis of aCGH data, which integrates developed algorithms. The conclusions from the design, implementation and its application to real data analysis will be summarized. Participant: *Tomasz Gambin* PhD Student.

4.4. Other projects

- [Pro13] **Strategic Project of NCBI INFINITY-PASSIM - Interdisciplinary system for interactive scientific and technical information**, 08.2010-08-2013, Professor Marzena Kryszkiewicz; *Abstract*: PASSIM is part of the large scientific project, aiming to create a universal hosting and scientific content storage and sharing platform, financed by the National Centre for Research and Development. This project itself is one of the elements of a strategic research initiative “Interdisciplinary system for interactive scientific and technical information”. The project will be carried out in 2010-2013 by the research consortium directed by Warsaw University of Technology (Faculty of Electronics and Information Technology) and including Jagiellonian University, Scientific and Academic Computer Network (NASK), Military Technical Academy (WAT), Warsaw University (Faculty of Mathematics, Computer Science and Mechanics), National Library and Lazarski University. Second part of the aforementioned research initiative is Project INFINITY, carried out by the consortium led by Interdisciplinary Centre for Mathematical and Computational Modelling of the Warsaw University.
- [Pro14] **Project – Adapting fault injection techniques to improve Samsung mobile products**. Professor Janusz Sosnowski, 11 January 2010 – 6 January 2011.

- Collective project for Samsung Electronics Polska Sp. z o.o. *Abstract*: The objective of the project is to develop a methodology and software tools for checking fault effect propagation in mobile devices based on ARM microcontrollers and the Linux operating system. This project involves research in the area of fault simulation mechanisms and test scenarios targeted at software and hardware specificity of mobile products. Basing on this research two prototypes of fault injectors (simulators) will be developed: LRFI – Linux Real-time Fault Injector and QEFI – Qemu Emulated Fault Injector. The effectiveness of these simulators will be checked in experiments with selected mobile applications.
- [Pro15] **Project – Automated Web Browser Rendering Results Comparison.** Professor Przemysław Rokita, 3 September 2010 – 4 July 2011. Collective project for Samsung Electronics Polska Sp. z o.o. *Abstract*: Project aimed at creating a framework for automatic testing of web browsers. The main goal is to validate results of HTML rendering engine by comparing the images presented to the user. One way to compare rendering results is to devise a metric that would express the perceptual distance between two input images. This solution can be used for statistical testing of browsers. The final goal of the project is to make a system that would not only measure the difference but also give a report that would explain it, prepare a list of defects, evaluate their impact on rendering and combine partial scores into one metric.
- [Pro16] **Project – S2B Science 2 Business Innovation Incubator.** Dr. Piotr Gawrysiak, 31 July 2009 – 30 June 2012. Collective project for Fundacja na Rzecz Budowy Społeczeństwa Opartego na Wiedzy “Nowe Media”. *Abstract*: “S2B Science 2 Business Innovation Incubator” is a technology incubator programme, operated by a consortium of Polish universities and private companies funded within objective 3.1 of the Ministry of Economy Operational Programme Innovative Economy. It aims to proactively identify innovative technology projects that could be carried out by alumni or students of the faculty and incubating them up to the moment when the project can be commercialized. The incubation would include not only financial backing, but also logistics support and direct help to project authors from Institute of Computer Science researchers.
- [Pro17] **Project No. FSS/2009/II/D5/W/0032/U/007 – Adjusting didactic offer and teaching methodologies to current developments of IT market.** Professor Henryk Rybiński, 1 July 2009 – 31 October 2010. Collective project for Fundusz Stypendialny i Szkoleniowy. *Abstract*: Rapid development of the IT market both in Poland and globally (related to a growing significance of Internet) made this research and education domain an important leverage for economic and social growth. This technological progress however has mostly happened outside academic grounds and is an outcome of innovative approach of entrepreneurs and consequent R&D activities of multinationals. As a result of that, the didactic offer of the Institute of Computer Science (but also of a number of other academic institutions in Poland) became at least partially out-dated, and its graduates lack state-of-the-art knowledge which makes that less competitive on the labour market. In order to keep in line with high education standards of the Warsaw University of Technology and to prepare highly qualified graduates, the Institute of Computer Science decided to undertake the project aiming at adjusting didactic offer and teaching methodologies to current developments of the IT market. The said project

will be composed of 3 main tasks described here: 1. Preparation of new courses: Computational intelligence and cognitive science, Multi-agent systems, Geographical-information systems, Mobile application development, Cataloguing and fuzzy systems. 2. Preparation of new laboratories: Virtualisation technologies, Data-mining methods. 3. Re-view of existing courses: Data-bases, Advanced problems of data-bases, Advanced methods for software engineering. The outcome of the project is an increase of the teaching quality both on graduate and postgraduate levels in the field of computer sciences. The specific project outcomes are as follows: increase of competitiveness of the graduates of the Faculty in the market (labour market), greater competitiveness of the Institute of Computer Science compared to other teaching institutions in Europe.

- [Pro18] **Project No. PR 43431 – Design and implementation of a new WWW-ISIS software for both Windows and Linux platforms.** Professor Henryk Rybiński, 1 December 2009 – 30 November 2010. Project for FAO. *Abstract:* The goal of the project is to build a fully fledged schemaless database along with the RAD tools for building repositories with advanced text retrieval functionalities. The main planned feature of the solution is to provide compatibility with the CDS/ISIS approach in terms of formatting language, and with WWW-ISIS in terms of tools for building applications. The system will be based on the FOSS solutions, with Lucene as the search engine and a relational database (SQLite or PostgreSQL) as a storage for XML records. The first application planned for the new system is upgrading the FAO system FAOLEX (in terms of database maintenance functionality, as well as web based search interfaces).
- [Pro19] **Project No. 39/09 – Automation of semantic rule creation for voice services at FT and TP with natural language speech recognition** (in Polish – Automatyzacja budowy reguł semantycznych na potrzeby usług głosowych FT i TP z rozpoznawaniem mowy w języku naturalnym). Dr Dominik Ryżko, 24 December 2009 – 30 June 2010. Project for Telekomunikacja Polska S.A. *Abstract:* The project covers current state of semantic analysis in the FT dialog services, drawbacks and bottlenecks of used methods and technology. In the second part the authors show possible solutions, potentially improving the process in the context of semantic analyzing. The general aim of this report is to focus on drawbacks of the present semantic analyser and proposals for improving its work. All our solutions could be divided into two parts. First proposals concern speech tagging and process of building semantic rules. Next improvements are much more closely connected with FT semantic analyzer – achieve more efficient rule matching and rule reasoning in the voice services.
- [Pro20] **Project - Implementation of Computer Aided Translation software** (in Polish – Wdrożenie oprogramowania wspomagającego proces tłumaczenia (tzw. narzędzia CAT). Rajmund Kożuszek, 2 August 2010 – 24 September 2010. Project for Busy b Translations Sp. z o.o. *Abstract:* The aim of the project was to maximize benefits resulting from Computer Aided Translation software used in the translation office. Specifically, it was necessary to plan documents' workflow in the office and to prepare application supporting centralized and effective management of translation memories and glossaries used in translation process. Additionally, during project's realization, special software module for detecting frequently repeated phrases, used as terms proposals for glossaries, was created. Participant: *Zbigniew Manasterski*, student.

- [Pro21] **Project – Data analysis for the needs of marketing campaigns** (in Polish – Analiza danych na potrzeby kampanii marketingowych). Dr Grzegorz Protaziuk, 1 June 2010 – 30 April 2011. Project for Pro Duct By Business Friends. *Abstract:* Development and implementation of new data mining methods adapted for analyses of sales data for the needs of carrying out various marketing campaigns as well as the implementation of these methods in the form of an autonomous analytical module. The developed methods will be oriented towards:
- analysis of influence of various events (e.g. promotional efforts) on customers' behavior concerning buying goods and services;
 - automatic or semiautomatic creation of customers segments adjusted to the needs of a given marketing campaign.

The developed algorithms will allow for analysing of multidimensional and hierarchical data, and data with multivalued attributes. The practical usefulness of the methods as well as their effectiveness will be verified experimentally.

The analytical module will be a part of a bigger system comprehensively supporting carrying out the marketing campaigns and will allow a user to define various analysis criteria and to add easily new analysis methods.

Expected results:

- new data mining methods which allow obtaining results of the essential practical meaning in the process of defining and executing marketing campaigns;
- specification of input parameters of the methods;
- specification of output results formats of the methods which will make using these results in other modules of the system possible;
- the production version of the module integrated with the rest of the system.

Research groups from the Institute of Computer Science participate also in the following research projects led by persons from other institutes of WUT:

- [Pro22] Project – **EFIPSANS (www.efipsans.org, w ramach 7 programu ramowego)**, supervisor from Institute of Telecommunication: Sławomir Kukliński, participants from Institute of Computer Science: Jacek Wytrębowski, Paweł Radziszewski, Krzysztof Cabaj.
- [Pro23] Project – **Future Internet Engineering (Inżynieria Internetu Przyszłości) - <http://www.iip.net.pl/>, w ramach projektu innowacyjna gospodarka**, supervisor from Institute of Telecommunication: Józef Lubacz, participant from Institute of Computer Science: Krzysztof Cabaj.
- [Pro24] Project – **Eco-Mobility**. A team from Institute of Computer Science is involved in the project Eco-Mobility, 85% co-financed by European Regional Development Fund within the Innovative Economy Programme. The project coordinator is Professor W. Choromański from the Faculty of Transport. The team composed of A. Derezińska, W. Daszczuk, H. Dobrowolski, W. Grabski, J. Mieścicki, A. Pająk and J. Wytrębowski deals with the concept and design of computer system within Task I – PRT (Personal Rapid Transit), the automated system for urban passenger transportation. Project completion is scheduled for 2013.

4.5. International co-operation

- [IC1] Visit of Professor Jarek Gryz from York University, Toronto, Canada, May, 2010, invited lecture: “Database Query Optimization”.
- [IC2] Visit of Professor Jan Rauch from University of Economics, Prague, November 2009, invited lecture “Guha Method as a KDD tool”
- [IC3] Visit of Professor Marek Druzdziel from School of Information Sciences and Intelligent Systems Program, University of Pittsburgh, November 2009, invited lecture: Passive Construction of Diagnostic Decision Models
- [IC4] EU-CANADA Cooperation programme in the field of higher education and vocational training “Building Internationally Distributed Computer Science Joint Degree Programs”, EC Project Partner: Professor Marzena Kryszkiewicz, October 2008 – October 2011.

5. TITLES AND DEGREES AWARDED

5.1. DSc Degrees

- [DSc1] **Piotr Tadeusz Gawrysiak**, *Cyfrowa rewolucja. Rozwój cywilizacji informacyjnej*, Warsaw, April 28, 2010.

5.2. PhD Degrees

- [PhD1] **Jakub Koperwas**, *Clustering techniques of leaf-labelled trees and their applications*, supervisor: Professor Krzysztof Walczak, Warsaw, June 2010.
- [PhD2] **Kamil Kompa**, *Fuzzy logic based control of double-rotore reluctance oil pump*, supervisors: Professor Norbert Michalke and Antoni Dmowski, Warsaw, June 2010.
- [PhD2] **Łukasz Skonieczny**, *Odkrywanie częstych grafów z uwzględnieniem niespójności*, supervisor: Professor Marzena Kryszkiewicz, Warsaw, November 2010.

5.3. BSc and MSc Degrees

For each BSc and MSc thesis listed below, the name of the scientific supervisor and the final grade awarded by the reviewers follow the author's name and the title of the thesis. The notes are provided in parentheses. They range from (excellent) through 5 (very good), 4 (good), to 3 (acceptable), with possible values in between (e.g., 4.5). The theses are generally written in Polish and they are available in the library of the Institute. The theses marked with an asterisk (*) are written in English.

- [BSc1] **Augustyński Marcin**, *Usage the Ruby programming language* (in Polish – Zastosowania języka programowania Ruby), supervisor: Ilona Bluemke, (5)
- [BSc2] **Banaśkiewicz Łukasz Jakub**, *VoIP management application for Symbian S60 mobile phones* (in Polish – Aplikacja zarządzająca funkcjonalnością VoIP telefonów komórkowych z systemem Symbian S60), supervisor: Piotr Gawrysiak, (5)
- [BSc3] **Barczyński Bartosz**, *Html forms generator as application supporting the recruitment of students of International exchange programs* (in Polish – Generator formularzy html jako aplikacja wspomagająca rekrutację do studenckich programów wymiany międzynarodowej), supervisor: Dariusz Turlej, (5)
- [BSc4] **Bednaszyński Łukasz Marcin**, *Honeypot systems for WWW applications* (in Polish – Systemy Honeypot dla aplikacji WWW), supervisor: Krzysztof Cabaj, (5)
- [BSc5] **Boruta Przemysław**, *Fault injection simulator for the IBM Power platform* (in Polish – Symulator błędów na platformę IBM Power), supervisor: Piotr Gawkowski, (5)
- [BSc6] **Burakowski Grzegorz**, *AJAX-based visual programming game*, supervisor: Piotr Gawrysiak, (5)*
- [BSc7] **Byczuk Maciej**, *Internet-based public transport journey planning service*, supervisor: Robert Bembenik, (5)*

- [BSc8] **Byszewski Paweł**, *Cross-platform system for satellite navigation using widely available maps* (in Polish – Przenośna aplikacja nawigacji satelitarnej wykorzystująca publicznie dostępne mapy cyfrowe), supervisor: Witold Wysota, (5)
- [BSc9] **Charkiewicz Kamil Grzegorz**, *Design and implementation of application for profile identification in DNA mixtures* (in Polish – Projekt i implementacja aplikacji identyfikującej profil w mieszaninach DNA), supervisor: Robert Marek Nowak, (5)
- [BSc10] **Cegielski Michał**, *p2p aware routing*, supervisor: Michał Nowacki, (4)*
- [BSc11] **Dendek Piotr Jan**, *The ARES system module for rules confidence and support variation analysis* (in Polish – Narzędzie do analizy zmienności ufności i wsparcia reguł w systemie ARS), supervisor: Roman Podraza, (4,5)
- [BSc12] **Doliński Adam**, *A simple educational toolkit to aid the study of machine learning*, supervisor: Piotr Parewicz, (5)*
- [BSc13] **Drynkowska Barbara**, *Multimedia museum – example of use of the Oracle Database 11g Multimedia feature* (in Polish – Multimedialne muzeum – przykład wykorzystania możliwości multimedialnych Oracle Database 11g), supervisor: Michał Rudowski, (5)
- [BSc14] **Dutkiewicz Hanna Dorota**, *The recognition of static sign language gestures from a video camera* (in Polish – Rozpoznawanie znaków statycznych języka migowego z kamery wideo), supervisor: Krzysztof Chabko, (5)
- [BSc15] **Dybiec Sławomir Paweł**, *Three-tier application for servicing medical premises* (in Polish – Aplikacja trójwarstwowa do obsługi gabinetów lekarskich), supervisor: Jarosław Dawidczyk, (4,5)
- [BSc16] **Dziedzicki Rafał**, *Systems integration on example of e-commerce application* (in Polish – Integracja systemów na przykładzie aplikacji dla handlu elektronicznego), supervisor: Waldemar Grabski, (3)
- [BSc17] **Dzioba Marcin**, *WWW-interface to classification applications*, supervisor: Zbigniew Szymański, (5)*
- [BSc18] **Dźwigala Paweł**, *Performance testing of SoHo Wi-Fi routers* (in Polish – Badanie wydajności domowych ruterów Wi-Fi), supervisor: Jacek Wytrębowski, (5)
- [BSc19] **Fabijański Zbigniew**, *Web application frameworks for Java Enterprise Edition platform* (in Polish – Sieciowe szkielety aplikacyjne dla platformy Java EE), supervisor: Ilona Bluemke, (5)
- [BSc20] **Gałązka Karol**, *Uncompetitive bridge bidding decision support system* (in Polish – System wspomaganie decyzji w licytacji jednostronnej w brydżu sportowym), supervisor: Dominik Ryżko, (excellent)
- [BSc21] **Gawlik Agata**, *CRM system supporting direct marketing* (in Polish – System klasy CRM wspomagający działania marketingu bezpośredniego), supervisor: Andrzej Ciemski, (5)
- [BSc22] **Godlewski Mariusz**, *DNA mixtures interpretation*, supervisor: Robert Nowak, (5)*

- [BSc23] **Grydziuszko Karol**, *Car driving simulation in computer game context* (in Polish – Symulacja jazdy samochodem w kontekście gier komputerowych), supervisor: Tomasz Martyn, (4,5)
- [BSc24] **Gierszewski Maciej**, *Rendering engine for a 3D computer game* (in Polish – Silnik graficzny trójwymiarowej gry komputerowej), supervisor: Tomasz Martyn, (5)
- [BSc25] **Graszka Piotr Zbigniew**, *3D scenes interactive display system* (in Polish – System interaktywnego wyświetlania scen 3D), supervisor: Krzysztof Gracki, (5)
- [BSc26] **Halicki Kamil**, *Integration of IT systems using Webservices* (in Polish – Integracja systemów IT z wykorzystaniem technologii Web Service na przykładzie usługi doładowania telefonu komórkowego przez konto w banku), supervisor: Andrzej Ciemski, (4,5)
- [BSc27] **Jamiolkowska Mariola**, *Using virtual machines in academic computer laboratories* (in Polish – Wykorzystanie maszyn wirtualnych w dydaktycznym laboratorium komputerowym), supervisor: Marek Pawłowski, (excellent)
- [BSc28] **Jarka Maciej**, *The application of data mining methods in telecommunications* (in Polish – Zastosowania metod eksploracji danych w telekomunikacji), supervisor: Roman Podraza, (excellent)
- [BSc29] **Jóźwicki Wiktor**, *EventFind – prototype of system which provides information about social events with use of user's location and proximity* (in Polish – EventFind – prototyp systemu informującego o wydarzeniach kulturalnych z wykorzystaniem informacji o bliskości i lokalizacji użytkownika), supervisor: Robert Bembenik, (5)
- [BSc30] **Juchnowicz-Bierbasz Romuald**, *3D Pointing Device* (in Polish – Przestrzenne urządzenie wskazujące), supervisor: Krzysztof Chabko, (4,5)
- [BSc31] **Jurewicz Wojciech**, *Application of generative programming to create applications in Xforms* (in Polish – Zastosowanie programowania generatywnego do tworzenia aplikacji w języku XForms), supervisor: Tomasz Traczyk, (5)
- [BSc32] **Kaczmarczyk Adrian Nikodem**, *Control of the railroad models using the personal computer* (in Polish – Sterowanie modelami kolejowymi z użyciem komputera PC), supervisor: Grzegorz Mazur, (5)
- [BSc33] **Kalański Piotr**, *Service Desk consistent with ITIL recommendations* (in Polish – System Service Desk zgodny z zaleceniami ITIL), supervisor: Michał Rudowski, (5)
- [BSc34] **Kamelak Mariusz**, *Web application support for the administration of estate* (in Polish – Aplikacja WWW wspomagająca administrowanie), supervisor: Waldemar Grabski, (4,5)
- [BSc35] **Kanafa Krzysztof**, *World Wide Web pages statistic server* (in Polish – Serwer statystyk stron WWW), supervisor: Krzysztof Chabko, (5)
- [BSc36] **Kaźmierczak Paweł**, *Test of TCP extension options* (in Polish – Testy dla opcji protokołu TCP), supervisor: Jacek Wytrębowicz, (4,5)
- [BSc37] **Kintop Radosław Janusz**, *MEMS accelerometers usage in 2D/3D computer applications* (in Polish – Zastosowania akcelerometrów MEMS w komputerowych aplikacjach 2D/3D), supervisor: Krzysztof Gracki, (4)

- [BSc38] **Kłapcińska Aleksandra Anna**, *Adaptive web search* (in Polish – Adaptacyjne wyszukiwanie w sieci WWW), supervisor: Iлона Bluemke, (5)
- [BSc39] **Kociszewski Łukasz**, *System for creating dynamic tour guides with determined route* (in Polish – System tworzenia dynamicznych przewodników turystycznych z automatycznym wyznaczaniem tras zwiedzania), supervisor: Krzysztof Chabko, (5)
- [BSc40] **Kogut Tomasz**, *Project and implementation of multiagent storehouse simulation* (in Polish – Projekt i implementacja systemu agnetowego do planowania ruchu w magazynie), supervisor: Dominik Ryżko, (5)
- [BSc41] **Kołodziejcki Michał, Krasnyk Tomasz**, *Gathering information about roads' condition* (in Polish – Zbieranie w “terenie” informacji o jakości dróg), supervisor: Piotr Gawrysiak, (5)
- [BSc42] **Kopczyński Tomasz**, *Social financial Internet service with data mining* (in Polish – Serwis społecznościowy o tematyce finansowej z elementami data mining), supervisor: Andrzej Ciemski, (5)
- [BSc43] **Korniluk Marcin**, *Modelling of the liquid's surface* (in Polish – Modelowanie powierzchni cieczy), supervisor: Jacek Raczkowski, (5)
- [BSc44] **Kowalik Witold Adam**, *Content Management System based on J2EE technology*, supervisor: Paweł Radziszewski, (5)*
- [BSc45] **Kowalski Tomasz**, *Software implementation of authorization involving Microsoft Windows mechanisms for open-source platform* (in Polish – Oprogramowanie zdalnej autoryzacji Windows na platformę open-source), supervisor: Grzegorz Blinowski, (5)
- [BSc46] **Koźbial Szymon Andrzej**, *Model of active balancing for lithium secondary battery* (in Polish – Model aktywnego balansowania baterii litowych ogni w wtórnych), supervisor: Grzegorz Mazur, (5)
- [BSc47] **Krotiuk Marek Leszek, Plichta Bartosz Mikołaj**, *Data exploration platform*, supervisor: Robert Bembenik, (5)*
- [BSc48] **Krygiel Krzysztof**, *Interactive transformation of context-free grammars and generation of parsers tables* (in Polish – Interakcyjna transformacja gramatyk bezkontekstowych i generacja tabel parserów), supervisor: Andrzej Pająk, (5)
- [BSc49] **Krześniak Michalina**, *An application for managing personal finances* (in Polish – Aplikacja do zarządzania budżetem domowym), supervisor: Witold Wysota, (4,5)
- [BSc50] **Księżniak Jakub**, *The use of a GPU in solving nearest neighbor search problem* (in Polish – Wykorzystanie GPU w zadaniach wyszukiwania najbliższego sąsiada), supervisor: Rajmund Kożuszek, (5)
- [BSc51] **Kubacki Marcin**, *Log files profiles' analysis in Linux* (in Polish – Analiza profili dzienników w systemie Linux), supervisor: Janusz Sosnowski, (5)
- [BSc52] **Kulesza Michał**, *Testing the performance of the industrial Ethernet switches* (in Polish – Testy wydajności przemysłowych przełączników Ethernet), supervisor: Jacek Wytrębowski, (5)
- [BSc53] **Kuliński Marcin**, *A digital signature based on RSA algorithm* (in Polish – Podpis cyfrowy oparty na algorytmie RSA), supervisor: Andrzej Skorupski, (4,5)

- [BSc54] **Linke Przemysław Andrzej**, *A PDA application for secure data storage* (in Polish – Aplikacja dla urządzeń PDA do bezpiecznego przechowywania informacji), supervisor: Waldemar Grabski, (4)
- [BSc55] **Lisiecki Michał**, *Measurement of intima-media thickness based on USG image* (in Polish – Wyznaczanie grubości ściany tętnicy szyjnej na podstawie zdjęcia USG), supervisor: Jan Mulawka, (5)
- [BSc56] **Łabudziński Piotr**, *Object tracking system using GPS in application on mobile phone* (in Polish – System śledzenia obiektów przy użyciu GPS w aplikacji na telefon komórkowy), supervisor: Krzysztof Chabko, (5)
- [BSc57] **Łukasiak Michał**, *Segmentation of otoacoustic TEOAE emissions on time-frequency plane* (in Polish – Segmentacja rozkładu czasowo-częstotliwościowego sygnałów otoakustycznych TEOAE), supervisor: Antoni Grzanka, (5)
- [BSc58] **Machoń Jakub**, *VNC server for Symbian S60 devices* (in Polish – Serwer VNC na telefony komórkowe z systemem Symbian S60), supervisor: Piotr Gawrysiak, (5)
- [BSc59] **Majcher Piotr**, *Control system for a group of mobile robots moving on the road network* (in Polish – System sterowania dla grupy robotów mobilnych), supervisor: Wojciech Szykiewicz, (5)
- [BSc60] **Maliszewski Łukasz**, *Design and implementation of a stream cipher* (in Polish – Projekt i implementacja szyfru strumieniowego), supervisor: Andrzej Skorupski, (4,5)
- [BSc61] **Mielcarski Wiktor Adam**, *Fractal adaptive level of detail in real time* (in Polish – Adaptacyjny poziom szczegółowości fraktali IFS w czasie rzeczywistym), supervisor: Tomasz Martyn, (4)
- [BSc62] **Mielnicki Mateusz**, *Duplicates management in the file system* (in Polish – Zarządzanie duplikatami w systemie plików), supervisor: Jerzy Chrzęszcz, (5)
- [BSc63] **Naszko Joanna**, *Distributed execution of programs* (in Polish – Rozproszone wykonywanie programów), supervisor: Grzegorz Protaziuk, (5)
- [BSc64] **Nikiel Tomasz**, *C++ library for creating graphical applications with physics simulation* (in Polish – Biblioteka programistyczna dla Qt do tworzenia aplikacji z elementami fizyki), supervisor: Witold Wysota, (4,5)
- [BSc65] **Nowak Stanisław**, *Implementation of speech recognition algorithm using Cuda library* (in Polish – Implementacja algorytmu rozpoznawania mowy z wykorzystaniem biblioteki CUDA), supervisor: Julian Myrcha, (4)
- [BSc66] **Nowotka Michał Maciej**, *Heuristics for haplotype frequency estimation with a large number of analyzed loci* (in Polish – Heurystyki dla obliczania haplotypów przy dużej liczbie analizowanych loci), supervisor: Robert Nowak, (5)
- [BSc67] **Pawelec Marcin**, *University Management System with WWW interface* (in Polish – System obsługi uczelni z interfejsem WWW), supervisor: Robert Bembenik, (4)
- [BSc68] **Pawelczyk Jacek**, *Wireless networks design tool*, supervisor: Paweł Radziszewski, (excellent)*
- [BSc69] **Perzyna Mariusz**, *A simple natural language processing program to translate natural language relational database queries into SQL*, supervisor: Piotr Parewicz, (5)*

- [BSc70] **Rejman Łukasz**, *The skeletal object motion planner* (in Polish – Planowanie ruchu obiektów szkieletowych), supervisor: Krzysztof Gracki, (5)
- [BSc71] **Rębiś Tomasz**, *OpenStreetMap client for Android* (in Polish – Klient OpenStreetMap na platformę mobilną Android), supervisor: Piotr Gawrysiak, (5)
- [BSc72] **Rogowski Michał**, *Object-oriented web content management system* (in Polish – Obiektowy system zarządzania treścią strony internetowej), supervisor: Artur Krystosik, (5)
- [BSc73] **Salkiewicz Paweł**, *Encryption of data using symmetric block ciphers* (in Polish – Szyfrowanie za pomocą blokowych szyfrów symetrycznych), supervisor: Andrzej Skorupski, (5)
- [BSc74] **Saran Piotr**, *Automatization of code refactorization to chosen design patterns* (in Polish – Automatyzacja refaktoryzacji kodu do wzorców projektowych), supervisor: Anna Derezińska, (5)
- [BSc75] **Seneczko Przemysław**, *Set of exercises taking advantages of disk arrays and virtual tape library* (in Polish – Zestaw ćwiczeń laboratoryjnych z wykorzystaniem macierzy dyskowych i bibliotek wirtualnych napędów taśmowych), supervisor: Piotr Gawkowski, (5)
- [BSc76] **Sękowski Jakub Jerzy**, *Stock market data visualization system for mobile phones* (in Polish – System wizualizacji danych giełdowych na urządzeniach mobilnych), supervisor: Grzegorz Protaziuk, (5)
- [BSc77] **Skrobek Kamil**, *Testing TCP options* (in Polish – Testowanie opcji protokołu TCP), supervisor: Jacek Wytrębowski, (5)
- [BSc78] **Skrzypkowski Maciej**, *Planning robots actions using reinforcement learning* (in Polish – Planowanie działań robotów z wykorzystaniem algorytmów uczących się), supervisor: Paweł Wawrzyński, (4)
- [BSc79] **Stefańczyk Maciej**, *Framework for sensory data processing* (in Polish – Struktura ramowa do przetwarzania danych sensorycznych), supervisor: Tomasz Kornuta, (5)
- [BSc80] **Surowiecki Rafał Marcin**, *Clustering sequential data using Contour algorithm* (in Polish – Grupowanie danych sekwencyjnych z wykorzystaniem algorytmu Contour), supervisor: Krzysztof Walczak, (5)
- [BSc81] **Syroka Leszek**, *Autonomous vehicle simulator based on stereovision images* (in Polish – Symulator automatycznego sterowania pojazdem na podstawie obrazów stereowizyjnych), supervisor: Krzysztof Chabko, (5)
- [BSc82] **Szkudlarek Kacper**, *Active location of bar codes areas* (in Polish – Aktywna lokalizacja obszarów zawierających kody kreskowe), supervisor: Tomasz Kornuta, (4,5)
- [BSc83] **Szostek Paweł**, *Object's position analyzer based on acceleration sensors* (in Polish – Analizator ruchu obiektu wykorzystujący czujniki), supervisor: Marek Pawłowski, (4,5)
- [BSc84] **Świętochowski Maciej Andrzej**, *Distributed operating systems laboratory* (in Polish – Laboratorium rozproszonych systemów operacyjnych), supervisor: Tomasz Jordan Kruk, (5)

- [BSc85] **Świniarski Karol**, *Implementation of a real-time 3D game engine and its application to developing a sailing simulator* (in Polish – Implementacja silnika do aplikacji 3d czasu rzeczywistego i wykorzystanie do stworzenia symulatora jachtu żaglowego), supervisor: Tomasz Martyn, (5)
- [BSc86] **Trybek Weronika**, *Design and development of multiagent system for manufacturing process management* (in Polish – Projekt i budowa systemu agentowego do zarządzania procesem produkcji), supervisor: Dominik Ryżko, (5)
- [BSc87] **Tuczapski Tomasz**, *Registration of fixed assets application with possibility of stocktake* (in Polish – Aplikacja do ewidencji środków trwałych z możliwością inwentaryzacji), supervisor: Waldemar Grabski, (4)
- [BSc88] **Turczyński Damian Daniel**, *User interfaces based on recognition of hand motion and gestures* (in Polish – Interfejsy użytkownika bazujące na rozpoznawaniu ruchu i gestów dłoni), supervisor: Krzysztof Gracki, (5)
- [BSc89] **Walczak Piotr**, *Bank account web interface* (in Polish – Internetowy interfejs rachunku bankowego), supervisor: Jarosław Dawidczyk, (4)
- [BSc90] **Wawer Jarosław**, *Classes management system on Java EE platform* (in Polish – Projekt systemu wspomagającego obsługę zajęć w technologii Java EE), supervisor: Jacek Lewandowski, (5)
- [BSc91] **Węgrzyniak Emil**, *A prototype system – EmiWebWeg – supporting full-text search in the WWW* (in Polish – Prototyp systemu EmiWebWeg wspierającego wyszukiwanie pełnotekstowe w sieci WWW), supervisor: Jarosław Chudziak, (5)
- [BSc92] **Wilk Rafał**, *Business data exchange platform prototype based on ebXML and Web Services* (in Polish – Prototypowa platforma wymiany informacji handlowych w formacie M3XML na bazie ebXML I Web Service), supervisor: Tomasz Traczyk, (excellent)
- [BSc93] **Witkowski Paweł Konrad**, *Tool for testing web application interface* (in Polish – Narzędzie do testowania interfejsu WWW), supervisor: Artur Krystosik, (4,5)
- [BSc94] **Wrona Grzegorz**, *Sale – increasing mechanism in online stores* (in Polish – Mechanizmy zwiększania sprzedaży w sklepach internetowych), supervisor: Robert Bembenik, (3,5)
- [BSc95] **Wysocki Michał Krzysztof**, *Creating accessible websites* (in Polish – Tworzenie stron internetowych dla osób niepełnosprawnych), supervisor: Jan Zabrodzki, (5)
- [BSc96] **Zawadzki Jakub**, *Battery analyser*, supervisor: Janusz Rzeszut, (4)*
- [BSc97] **Zegadło Radosław**, *Classes management system on Java EE platform* (in Polish – System wspomagający obsługę zajęć w technologii Java EE), supervisor: Jacek Lewandowski, (5)
- [BSc98] **Żukowski Andrzej**, *Trends of discovered knowledge* (in Polish – Trendy odkrywanej wiedzy), supervisor: Roman Podraza, (5)
- [MSc1] **Bielski Krzysztof**, *Usability analysis and testing of information systems* (in Polish – Analiza i badanie użyteczności systemów informatycznych), supervisor: Paweł Radziszewski, (5)

- [MSc2] **Bojar Jarosław**, *The implementation of object-relational mapping system using aspect oriented programming* (in Polish – Implementacja systemu mapowania obiektowo-relacyjnego przy użyciu programowania aspektowego), supervisor: Mieczysław Muraszkiewicz, (5)
- [MSc3] **Borowski Marek**, *Tools for interactive television application development* (in Polish – Informatyczne środowiska narzędziowe do budowy aplikacji dla telewizji interaktywnej), supervisor: Jacek Wytrębowicz, (3,5)
- [MSc4] **Bożek Michał**, *Universal database adapter for various mobile systems* (in Polish – Uniwersalny adapter do baz danych dla systemów mobilnych – studium wykonalności), supervisor: Piotr Gawrysiak, (5)
- [MSc5] **Brzezińska Aleksandra**, *Animation control with the use of WEBCAM* (in Polish – Sterowanie animacji za pomocą kamery internetowej), supervisor: Przemysław Rokita, (5)
- [MSc6] **Buczowski Piotr**, *Building feature-based maps solving the SLAM problem by a condition of using low-cost sensors and engines* (in Polish – Budowanie map znaczników podczas rozwiązywania zadania SLAM w warunkach niskiej klasy sensorów i napędów), supervisor: Henryk Dobrowolski, (4)
- [MSc7] **Chorko Janusz, Kobylarz Tomasz**, *Software error simulation for Java Card environment* (in Polish – Programowa symulacja błędów w środowisku Java Card), supervisor: Jacek Wytrębowicz, (excellent)
- [MSc8] **Dański Piotr**, *Automatic methods of creating behaviours of skeletal objects 2D* (in Polish – Automatyczne metody generowania ruchów obiektów szkieletowych 2D), supervisor: Krzysztof Gracki, (4,5)
- [MSc9] **Dębski Kamil**, *Recognition and searching for audio recordings* (in Polish – Rozpoznawanie oraz wyszukiwanie nagrań dźwiękowych), supervisor: Henryk Kowalski, (5)
- [MSc10] **Dudziak Tomasz**, *Simulation of collective construction in 3D space implementing stigmergy* (in Polish – Symulacja zbiorowego budowania w przestrzeni 3D z wykorzystaniem mechanizmu stygmergii), supervisor: Krzysztof Gracki, (5)
- [MSc11] **Fatyga Piotr**, *Comparison of data classifiers* (in Polish – Porównanie metod klasyfikacji danych), supervisor: Roman Podraza, (excellent)
- [MSc12] **Figaj Krzysztof Mariusz**, *Shape mining with Symbolic Aggregate Approximation representation* (in Polish – Eksploracja kształtów z wykorzystaniem reprezentacji symbolicznej SAX), supervisor: Krzysztof Walczak, (5)
- [MSc13] **Fronczak Anita**, *Word segmentation in handwriting recognition* (in Polish – Segmentacja słów na znaki w rozpoznawaniu pisma odręcznego), supervisor: Rajmund Kożuszek, (5)
- [MSc14] **Gabrysiak Piotr Marek**, *Building flexible multimodal biometric systems* (in Polish – Budowa elastycznych wielomodalnych systemów biometrycznych), supervisor: Piotr Salata, (5)

- [MSc15] **Gilewski Paweł Adam**, *Creating vector maps based on analysis of the trajectory of a moving object* (in Polish – Tworzenie map wektorowych na podstawie analizy trajektorii poruszającego się obiektu), supervisor: Krzysztof Gracki, (5)
- [MSc16] **Gnyszka Kamil**, *Comparison of various data access frameworks in Java language* (in Polish – Porównanie technologii dostępu do danych w języku Java), supervisor: Piotr Gawrysiak, (4)
- [MSc17] **Grochowski Konrad**, *Fault simulation using Bochs emulator* (in Polish – Symulacja błędów w środowisku emulatora Bochs), supervisor: Piotr Gawkowski, (5)
- [MSc18] **Gruszka Jakub**, *Security-control methods for statistical databases* (in Polish – Metody zabezpieczania statystycznych baz danych), supervisor: Dariusz Turlej, (5)
- [MSc19] **Ihnatowicz Aleksander Jan**, *Multiagent monitoring of service-oriented architecture systems* (in Polish – Agentowe monitorowanie systemów opartych na architekturze zorientowanej na usługi), supervisor: Dominik Ryzko, (5)
- [MSc20] **Iwiński Marcin**, *Improved reliability PSU subsystem for student satellite* (in Polish – Podsystem PSU o podwyższonej niezawodności dla satelity studenckiego), supervisor: Janusz Sosnowski, (4,5)
- [MSc21] **Izdebska Małgorzata**, *The modelling of modular plants using positioners on the example of sunflower* (in Polish – Modelowanie roślin modułowych z wykorzystaniem pozycjonerów na przykładzie słonecznika), supervisor: Cezary Stępień, (5)
- [MSc22] **Janikowski Szymon Andrzej**, *Identification of mountainous terrain features in a digital image* (in Polish – Wyszukiwanie cech charakterystycznych krajobrazu górskiego w obrazie fotograficznym), supervisor: Jan Zabrodzki, (excellent)
- [MSc23] **Kalinowski Piotr Paweł**, *Specialised DXF vector graphics visualisation and processing library* (in Polish – Specjalizowana biblioteka do wizualizacji i przetwarzania grafiki wektorowej w DXF), supervisor: Andrzej Pająk, (4,5)
- [MSc24] **Karolewski Łukasz, Smulko Grzegorz**, *Testing environment for Windows applications with particular consideration for .NET platform* (in Polish – Środowisko testów aplikacji systemu Windows ze szczególnym uwzględnieniem platformy .NET), supervisor: Piotr Gawkowski, (excellent)
- [MSc25] **Kędzior Radosław**, *The system of embodied agents represented by simple mobile robots – the algorithm of map merging in environment exploration* (in Polish – System agentów upostaciowionych reprezentowanych przez proste roboty mobilne – algorytm łączenia map w eksploracji otoczenia), supervisor: Henryk Dobrowolski, (5)
- [MSc26] **Kot Maciej**, *LOD models for physical interaction* (in Polish – Modele LOD dla oddziaływań fizycznych), supervisor: Krzysztof Gracki, (5)
- [MSc27] **Kluczek Grzegorz**, *Methods of Web content analysis and service integration using Web portal techniques* (in Polish – Metody analizy zawartości informacyjnej serwisów www i integracji aplikacji z wykorzystaniem mechanizmów portali internetowych), supervisor: Piotr Salata, (5)

- [MSc28] **Kompa Konrad**, *Analysis of virtual environments security* (in Polish – Problemy bezpieczeństwa środowisk wirtualnych), supervisor: Jacek Wytrębowski, (excellent)
- [MSc29] **Kowalczyk Wawrzyniec Mikołaj**, *Planning, architecting and deploying an enterprise reporting platform in the context of business process management* (in Polish – Planowanie, projektowanie i wdrażanie korporacyjnej platformy raportowej w kontekście zarządzania procesowego), supervisor: Mieczysław Muraszkiewicz, (5)
- [MSc30] **Krawczyk Michał**, *Methodology for creation of 3D flower models* (in Polish – Metoda tworzenia trójwymiarowych modeli kwiatów), supervisor: Cezary Stepień, (5)
- [MSc31] **Krawczyński Piotr**, *A system of evacuation routes planning under changing emergency conditions* (in Polish – System dynamicznego planowania dróg ewakuacyjnych w warunkach zmieniającego się zagrożenia), supervisor: Krzysztof Gracki, (4)
- [MSc32] **Królewski Jakub**, *Mobile augmented reality navigation system* (in Polish – Mobilny system nawigacyjny wykorzystujący rzeczywistość rozszerzoną), supervisor: Piotr Gawrysiak, (excellent)
- [MSc33] **Kuchna Aleksandra, Kuchna Tadeusz**, *Artificial intelligence algorithms in example of Quake II the game* (in Polish – Algorytmy sztucznej inteligencji na przykładzie gry Quake II), supervisor: Przemysław Rokita, (5)
- [MSc34] **Kulik Piotr**, *GPU based particle systems in modelling natural phenomena* (in Polish – Systemy cząsteczkowe oparte na GPU na przykładzie modelowania zjawisk naturalnych), supervisor: Tomasz Martyn, (5)
- [MSc35] **Laciński Paweł, Łacki Jarosław**, *Computer system integration based on process-oriented architecture* (in Polish – Integracja systemów informatycznych w opraciu o architekturę zorientowaną na procesach), supervisor: Piotr Salata, (5)
- [MSc36] **Łuszczyna Tomasz**, *Discovering sequential patterns with multidimensional interval elements* (in Polish – Odkrywanie wzorców sekwencyjnych z wielowymiarowymi elementami interwałowymi), supervisor: Marzena Kryszkiewicz, (4)
- [MSc37] **Markiewicz Piotr**, *Review of source code static analysis methods* (in Polish – Przegląd metod statycznej analizy kodu źródłowego), supervisor: Andrzej Pająk, (4,5)
- [MSc38] **Mierzejewski Dominik**, *Roman Pot Detector modelling and proton reconstruction in the TOTEM experiment at the LHC* (in Polish – Modelowanie detektorów Roman Pot i rekonstrukcja protonów w eksperymencie TOTEM przy LHC), supervisor: Janusz Rzeszut, (5)
- [MSc39] **Moniewski Paweł**, *Simulation of flowing water drops on flat surface* (in Polish – Symulacja procesu spływu kropli wody po płaskich powierzchniach), supervisor: Cezary Stepień, (5)

- [MSc40] **Mosdorf Łukasz**, *3D scene reconstruction using its 2D images for navigation applications* (in Polish – Rekonstrukcja sceny 3D na podstawie jej zdjęć 2D dla potrzeb nawigacji), supervisor: Przemysław Rokita, (excellent)
- [MSc41] **Murawski Kamil**, *Communications analysis methodology in SOA compatible applications* (in Polish – Metodyka analizy komunikacji w aplikacjach zgodnych z architekturą SOA), supervisor: Jacek Wytrębowski, (excellent)
- [MSc42] **Olbrzyś Kamil**, *Comparative SVM networks in Java language analysis* (in Polish – Analiza porównawcza sieci SVM w języku Java), supervisor: Andrzej Ciemski, (5)
- [MSc43] **Olszewski Piotr Jacek**, *An editor of ruler and compass constructions* (in Polish – Edytor klasycznych konstrukcji geometrycznych), supervisor: Andrzej Pająk, (4,5)
- [MSc44] **Ościak Paweł**, *A shared clipboard for virtual machines* (in Polish – Implementacja wspólnego schowka dla maszyn wirtualnych), supervisor: Grzegorz Mazur, (5)
- [MSc45] **Owczarska Aleksandra**, *Implementation and application of SOA protocol with multi-resulting* (in Polish – Rozwój technologii tworzenia aplikacji internetowych. Porównanie w kontekście rozwiązań i serwisów), supervisor: Roman Podraza, (4,5)
- [MSc46] **Pawliński Paweł**, *Real-time anomaly detection in network traffic* (in Polish – Wykrywanie anomalii w ruchu sieciowym w czasie rzeczywistym), supervisor: Grzegorz Blinowski, (5)
- [MSc47] **Piekarski Jarosław**, *Implementation of service consumer for ARES system in SOA architecture* (in Polish – Implementacja usługobiorcy dla systemu ARES w architekturze SOA), supervisor: Roman Podraza, (3,5)
- [MSc48] **Pietrasik Michał**, *Raytracing on programmable graphics cards* (in Polish – Wykorzystywanie programowalnych kart graficznych do wizualizacji obiektów metodą śledzenia promieni), supervisor: Tomasz Martyn, (4)
- [MSc49] **Piotrowski Michał**, *Information extraction from text documents* (in Polish – Automatyczna ekstrakcja informacji z dokumentów tekstowych), supervisor: Paweł Cichosz, (5)
- [MSc50] **Plewka Michał**, *Implementation and Application of SOA protocol with multi-resulting* (in Polish – Implementacja i zastosowanie protokołu SOA z wielowynikowością), supervisor: Roman Podraza, (5)
- [MSc51] **Plutecki Michał**, *Application of dialog system in medicine* (in Polish – Dialogowy system do zastosowań w medycynie), supervisor: Jan Mulawka, (5)
- [MSc52] **Plutecki Piotr**, *Generating text summaries using the WordNet lexicon and the PageRank algorithm* (in Polish – Generowanie streszczeń tekstu z wykorzystaniem leksykonu WordNet i algorytmu PageRank), supervisor: Henryk Rybiński, (5)
- [MSc53] **Przybylski Krzysztof**, *Information filtering algorithms in recommender systems* (in Polish – Algorytmy filtracji informacji w systemach rekomendacji), supervisor: Paweł Cichosz, (excellent)

- [MSc54] **Przyluski Michał**, *Convex optimization: selected problems and applications* (in Polish – Optymalizacja wypukła: wybrane zagadnienia i zastosowania), supervisor: Włodzimierz Ogryczak, (5)
- [MSc55] **Roguski Rafał**, *Analysis of application source code using object-oriented metrics* (in Polish – Analiza kodu źródłowego aplikacji z wykorzystaniem metryk obiektowych), supervisor: Ilona Bluemke, (5)
- [MSc56] **Romański Piotr**, *Dialogue system protocol in multi-agent environment* (in Polish – Protokół systemu dialogowego w środowisku wieloagentowym), supervisor: Mieczysław Muraszkiewicz, (5)
- [MSc57] **Skrzędziejewski Michał**, *RPC for embedded systems* (in Polish – RPC dla systemów wbudowanych), supervisor: Cezary Zieliński, (5)
- [MSc58] **Sobieszek Seweryn**, *Chatbots, answer choosing algorithms for Polish language* (in Polish – Czatboty, algorytmy wybierania odpowiedzi dla języka polskiego), supervisor: Mieczysław Muraszkiewicz, (5)
- [MSc59] **Suchecki Tadeusz**, *Efficient pattern recognition based on invariant moments* (in Polish – Efektywne rozpoznawanie wzorców w oparciu o niezmienniki momentowe), supervisor: Grzegorz Galiński, (4)
- [MSc60] **Szewczyk Marcin**, *Human-computer interaction (HCI) with electronic documents* (in Polish – Interakcje człowiek-maszyna (HCI) w kontekście dokumentów elektronicznych), supervisor: Rajmund Kożuszek, (5)
- [MSc61] **Turlej Sławomir**, *Image registration in HDRI techniques* (in Polish – Metody wyrównywania obrazów w technikach HDRI), supervisor: Jan Zabrodzki, (5)
- [MSc62] **Twardowski Bartłomiej**, *Automation of mobile application testing process with data mining support. Textual data clustering* (in Polish – Automatyzacja testowania aplikacji mobilnych ze wsparciem eksploracji danych. Grupowanie danych tekstowych), supervisor: Piotr Gawrysiak, (5)
- [MSc63] **Wasiak Michał**, *Graphics processing unit usage in stereoscopy* (in Polish – Wykorzystanie procesora karty graficznej w stereoskopii), supervisor: Julian Myrcha, (4,5)
- [MSc64] **Włodarczyk Krzysztof Marek**, *Analysis of the possibility of using data credibility coefficients in the ARES system* (in Polish – Analiza możliwości wykorzystania współczynników wiarygodności danych w systemie ARES), supervisor: Roman Podraza, (excellent)
- [MSc65] **Włodarczyk Jacek**, *Usage of Oracle Label Security in Software-as-a-Service distribution model* (in Polish – Zastosowanie mechanizmu Oracle Label Security w modelu dystrybucji oprogramowania Software-as-a-Service), supervisor: Michał Rudowski, (4)
- [MSc66] **Woronko Wojciech**, *ARES application in service oriented architecture* (in Polish – Aplikacja ARES w architekturze zorientowanej na usługi), supervisor: Roman Podraza, (5)

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- [MSc67] **Ziss Tomasz**, *The method of validation spatial data clustering algorithms* (in Polish – Metoda oceny algorytmów grupowania danych przestrzennych), supervisor: Michał Rudowski, (3,5)
- [MSc68] **Zych Kamil**, *Security issues in service-oriented architecture* (in Polish – Problemy bezpieczeństwa w architekturze zorientowanej na usługi), supervisor: Jacek Wytrębowicz, (5)
- [MSc69] **Żółtak Mateusz**, *Computer interfaces of measurement instrumentation* (in Polish – Komputerowe interfejsy aparatury pomiarowej), supervisor: Henryk Kowalski, (4,5)

6. PUBLICATIONS

6.1. Scientific and technical books, chapters in books, translations, editorships

- [Pub1] **Bluemke I., Billewicz K.:** “Aspect modification of an EAR application”. In *Advanced Techniques in Computing Sciences and Software Engineering*, K. Elleithy (Ed.), Springer Science+Business Media B.V., 2010, pp. 105–110.
- [Pub2] **Bluemke I., Baranowski L.:** “A hierarchical component model and its CASE tool”. Chapter 1. In *Monographs of System Dependability, Models and Methodology of System Dependability*, J. Mazurkiewicz et al. (Eds.), Oficyna Wydawnicza Politechniki Wrocławskiej, Wrocław 2010, pp. 11–22.
- [Pub3] **Bluemke I., Fugas J.:** “A tool supporting C code parallelization”. In *Innovations in Computing Sciences and Software Engineering*, T. Sobh, K. Elleithy (Eds.), Springer Science+Business Media B. V. 2010, pp. 259–264.
- [Pub4] **Bluemke I., Kiermasz W.:** “Integracja systemów w architekturze zorientowanej na usługi (Information systems integration in Service Oriented Architecture)”. Chapter 5. In *Inżynieria oprogramowania w procesach integracji systemów informatycznych*, J. Górski, C. Orłowski (Eds.), PWNT, Gdańsk, 2010, pp. 33–40, (in Polish).
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- [Pub95] **Szyprowski M.**: “An approach to reversible circuits synthesis based on switching networks”. *Proceedings of the 2nd Workshop on Reversible Computation*, Bremen, Germany, July 2 – 3, 2010 pp. 41–47.

7. RESEARCH REPORTS

- [Rep1] Dobrowolski H., Mieścicki J., Daszczuk W. B.: “Analiza wstępnych założeń systemowych, metodologii i zakresu implementacji systemu informatycznego w ramach projektu PRT. (Raport z pracy w ramach projektu ECO-mobilność, zadanie nr 1 – SYSTEM PRT)”. *ICS Research Report 1/2010*, Warsaw, February 2010, (in Polish).
- [Rep2] Jankowski St., Dwulit M., Szymański Z.: “Feature selection and mapping of data from short amino acid sequences”. *ICS Research Report 2/2010*, Warsaw, March 2010.
- [Rep3] Kryszkiewicz M., Lasek P.: “TI-DBSCAN: Clustering with DBSCAN by means of the triangle inequality”. *ICS Research Report 3/2010*, Warsaw, April 2010.
- [Rep4] Derezińska A., Kowalski K.: “Advances in mutation testing of C# programs”. *ICS Research Report 4/2010*, Warsaw, July 2010.
- [Rep5] Sosnowski J.: “Multidimensional approach to storage virtualization”. *ICS Research Report 5/2010*, Warsaw, July 2010.
- [Rep6] Sosnowski J.: “Application driven testing and test stresses”. *ICS Research Report 6/2010*, Warsaw, October 2010.
- [Rep7] Grochowski K.: “Skryptowa symulacja błędów z wykorzystaniem języka InScript (Script based fault injection with InScript language)”. *ICS Research Report 7/2010*, Warsaw, October 2010, (in Polish).
- [Rep8] Mosdorf M.: “Symulacja błędów dla systemów wbudowanych opartych na mikrokontrolerach ARM (Fault simulation in embedded systems based on ARM microcontrollers)”. *ICS Research Report 8/2010*, Warsaw, October 2010, (in Polish).
- [Rep9] Więch P., H. Rybinski: “A novel approach to default reasoning for MAS”. *ICS Research Report 9/2010*, Warsaw, December 2010.
- [Rep10] Derezińska A., M. Szczykalski: “From UML state machines to code execution - dealing with interpretation problems”. *Research Report 10/2010*, Warsaw, November 2010.
- [Rep11] Reńska D.: “Zagadnienie normalizacji w kontekście rozpoznawania pisma odręcznego (Normalization as the part of the handwriting recognition proces)”. *Research Report 11/2010*, Warsaw, December 2010, (in Polish).

8. AWARDS

[Award 1] Dr Paweł Terlecki has received the Prime Minister's Award for PhD thesis: "On the Relation between Jumping Emerging Patterns and Rough Set Theory with Application to Data Classification". The supervisor of the thesis was Professor Krzysztof Walczak.

[Award 1] The team: Professor Roman Z. Morawski, Professor Andrzej Pacut and Roman Podraza, PhD, received the Rector's collective award for the excellence in education.

9. CONFERENCES, SEMINARS AND MEETINGS

9.1. Organisation of international conferences

RSCTC 2010 – Rough Sets and Current Trends in Computing, International Conference, The University of Warsaw, Warsaw, Poland, 28 – 30 June, 2010. **General Chair** – Marcin Szczuka, The University of Warsaw, Poland, **Program Chairs**: Marzena Kryszkiewicz – Warsaw University of Technology, Poland; Sheela Ramanna – University of Winnipeg, Canada; Richard Jensen – The University of Wales, Aberystwyth, United Kingdom; Qinghua Hu – Harbin Institute of Technology, China.

CLA 2010 – Concept Lattices and Their Applications, International Conference, Universidad de Sevilla, Sevilla, 19 – 21 October, 2010. **Program Chairs**: Marzena Kryszkiewicz – Warsaw University of Technology, Poland; Sergei Obiedkov – Higher School of Economics, Moscow, Russia.

9.2. Participation in international conferences

- [Con1] The 5th International Symposium on Electronic Design, Test and Applications, Vietnam, 13 – 15 January 2010, participant: J. Sosnowski.
- [Con2] The 10th International Workshop on Pattern Recognition in Information Systems, Madeira, Portugal, 8 – 9 June 2010, participant: Z. Szymański.
- [Con3] The 10th International Conference on Artificial Intelligence and Soft Computing, Zakopane, Poland, 13 – 17 June 2010, participant: Ł. Kobyliński.
- [Con4] Signal Processing Symposium, 2010, Vilnius, Lithuania, 14 – 17 June, participant: B. Butkiewicz.
- [Con5] First International Symposium, ISARCS 2010, Prague, Czech Republic, 23 – 25 June 2010, participant: P. Gawkowski.
- [Con6] i.Tech 2010, 8th International Conference “Information Research and Applications, 24 – 27 June 2010, participant: R. Podraza.
- [Con7] The 7th International Conference RSCTC 2010, Warsaw, Poland, 28 – 30 June, 2010, participants: M. Kryszkiewicz, H. Rybiński, R. Podraza, D. Ryzko, P. S. Kośmicki, M. Komorowski, A. Komorowska, P. Więch.
- [Con8] The Fifth International Conference on Dependability of Computer Systems DepCoS-RELCOMEX 2010, Brunów, Poland, 28 June – 2 July 2010, participants: I. Bluemke, A. Derezińska, J. Sosnowski.
- [Con9] 2nd Workshop on Reversible Computation, Bremen, Germany, 2 – 3 July 2010, participants: P. Kerntopf, M. Szyprowski.
- [Con10] IEEE 16th International On-Line Testing Symposium (10LTS) 2010, Corfu Island, Greece, 5 – 7 July 2010, participant: P. Gawkowski.
- [Con11] IEEE Congress on Evolutionary Computation, Barcelona, Spain, 18 – 23 July 2010, participant: P. Kerntopf.
- [Con12] 14th International Conference KES 2010, Cardiff, UK, 8 – 10 September 2010, participant: I. Bluemke.
- [Con13] East West Fuzzy Colloquium 2010, 17th Zittau Fuzzy Colloquium, Zittau/Gorlitz, 15 – 17 September 2010, participant: B. S. Butkiewicz.

- [Con14] 9th International Workshop on Boolean Problems, Freiberg, Germany, 16 – 17 September 2010, participant: P. Kerntopf.
- [Con15] 8th *IEEE East-West Design & Test Symposium (EWDTS 2010)*, St. Petersburg, Russia, 17 – 20 September 2010, participant: J. Sosnowski.
- [Con16] ISAT 2010 – 31th International Conference, Information Systems Architecture and Technology, Szklarska Poręba, Poland, 19 – 21 September, 2010, participants: I. Bluemke, A. Derezińska, K. Kompa, M. Mosdorf.
- [Con17] International Conference, ICCVG 2010, Warsaw, Poland, 20 – 22 September 2010, participants: P. Rokita, J. K. Lipowski.
- [Con18] 9th European Conference on Computational Biology, Ghent, Belgium, 26 – 29 September 2010, participant: T. Gombin.
- [Con19] International Joint Conference on Computer, Information, and Systems Sciences, and Engineering, CISSE'10, Bridgeport, 3 – 6 December 2010, participants: I. Bluemke, St. Niepostyn, A. Derezińska, M. Komorowski.

9.3. Local conferences

- [Con20] 13th Scientific Conference on Reconfigurable Computing and Systems, Szczecin, Poland, 27 – 28 May 2010, participants: P. Kerntopf, K. Kompa, M. Szyprowski.
- [Con21] III Krajowa Konferencja Naukowa Technologie Przetwarzania Danych, Poznań, Poland, 21 – 23 June, 2010, participants: I. Bluemke, Ł. Ciszak.
- [Con22] VIII Krajowa Konferencja Technologie Informacyjne (IT'2010), Gdańsk, Poland, 28 – 30 June 2010, participants: I. Bluemke, P. Gawkowski, P. Nazimek, M. Szczykalski.
- [Con23] National Conference KSTiT, Wrocław, 8 – 10 September 2010, participants: J. Wytrębowicz.
- [Con24] Krajowa Konferencja Inżynierii Oprogramowania i Systemów Czasu Rzeczywistego, Gdańsk, Poland, 27 – 29 September 2010, participants: I. Bluemke, A. Derezińska.
- [Con25] VI Sympozjum Naukowe Techniki Przetwarzania Obrazu – TPO'2010, Serock, Poland, 18 – 20 November 2010, participants: T. Martyn, J. Rzeszut, J. Zabrodzki.

10. LIBRARY OF THE INSTITUTE



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The Institute's Library the collection comprises more than 7000 books and 620 volumes of scientific journals and magazines. They are available to the Institute's staff as well as to the Computer Science students. Over ten Polish and foreign scientific and technical magazines are permanently subscribed. Additionally, the Institute's Library has in stock more than 4700 special library items, including hardware/software product catalogues, software documentation, etc., as well as the wide range of research reports, diploma theses etc., issued by the Institute itself and by other Polish and foreign research institutions. The collection of books and handbooks is systematically updated and it is very representative for the computer science and computer engineering domains.

The Library's information system provides the access not only to own database of books, magazines and publications, but also to the similar specialised libraries of five other Institutes constituting the Faculty of Electronics and Information Technology, to the Library of the Faculty (all located in the same building), as well as to the Main Library of the Warsaw University of Technology and, generally, to the national library information system. The library users have an access to the Internet (2 workstations) and to the ALEPH system – the library of the Institute is integrated with the library information system of the University.

K. Sosnowska has provided a specialised course "Library and Information Science Training" for the students of the Faculty.