UNIVERSITÄT LEIPZIG

COMPUTER SCIENCE

SHORT INTRODUCTION

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Impressum

Future home of the IfI in the new main buildung at Augustusplatz
Grafik: (EEA) Erick van Egeraat associated architects

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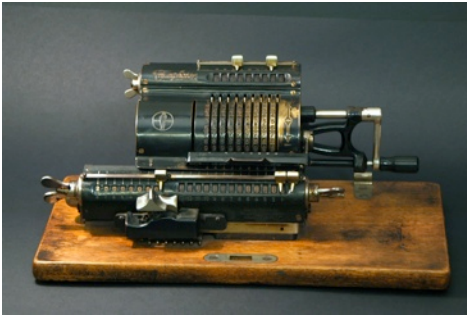
History of the Department of Computer Science

The Department of Computer Science was founded in 1993. Together with the Department of Mathematics it nowadays constitutes the Faculty of Mathematics and Computer Science. As a precursor the Institute for Machine Based Computing together with a Computing Centre was established already in 1963, lasting in this particular form of organization until 1972. In the years thereafter research and teaching have been transferred to the Department of Mathematics, and a computing centre as a central service unit for the university has been founded.

In the late eighties activities to establish again a Computer Science Department on its own gained ground. Following the German reunification first steps have been undertaken to establish the Department of Computer Science as it looks like today in 1990. Strong emphasis has been put on linking computer science to other sciences at the university, in particular the humanities, economics, natural sciences and medicine. In the humanities mainly linguistics have been addressed, in the natural sciences biology and mathematics, in economics insurance science, and in medicine medical informatics and statistics. In effect, application oriented research groups and curricula have been established like Natural Language Processing, Bioinformatics and Medical Informatics. An additional focus has been put on Theoretical Computer Science and Artificial Intelligence. Due to its strong emphasis on applications and excellent research, the Department of Computer Science was capable of attracting substantial research funding from government and industries, taking a top position in this regard both in comparison to other sciences at the University of Leipzig and to other departments of computer science at other universities.

The department is in charge of the Bachelor and Master degree of Computer Science, comprising various specializations as well as the teaching degree for primary and secondary schools. Presently there are about 850 students enrolled at the department.

Study Programs at IfI

The Institute for Computer Science administers a undergraduate program (1) and a graduate program (2)

- ‣ **(1)** Computer Science (6 semesters, 180 ECTS points) leading to Bachelor of Science (B.S.)
- ‣ **(2)** Computer Science (4 smesters, 120 ECTS points) leading to Master of Science (M.S.) with the four major topics bioinformatics, computational intelligence, medical informatics, and software systems.

In addition, we participate in

- ‣ Polyvalent Bachelor Program for School Teacher (6 semester, 180 ECTS points) with computer science as one major subject
- ‣ School Type Specific Master Program for School Teacher at Mittelschulen (4 semester, 120 ECTS points) with computer science as one major subject
- ‣ School Type Specific Master Program for School Teacher at Gymnasium (4 semester, 120 ECTS points) with computer science as one major subject

All programs are in German and admission requires suffcent knowledge in German. In Germany, it is usual to obtain a master's degree prior to the PhD studies. During PhD studies in computer science, classes are not required in Leipzig.

Additional information can be found at
http://www.informatik.uni-leipzig.de/lehre/studgang.html (in German).

Undergraduate Studies in Computer Science

The program requires 6 semesters of study inclduing the time for the bachelor thesis. It consists of modules, with each module lasting one semester and ending with an examination. The program starts with the winter semester. There is currently no numerus clausus, i.e. any admissable student will be enrolled. The undergraduate program gives students a broad scientific background in computer science qualifying for jobs like computer system design and their application to science, industry and management. It prepares also for graduate studies in computer science. The program has been designed according to the recommendations of the Gesellschaft für Informatik (GI - German Society for Computer Science) and has been accredited by the Zentrale Evaluations- und Akkreditierungsagentur (ZEvA). The program is split in a mandatory part, an obligatory elective part, an obligatory complement and the bachelor thesis. The mandatory partcomprises of 100 ECTS points in the first four seme sters and contains modules of

‣ Technical Computer Science (15 ECTS points)
‣ Theoretical Computer Science (15 ECTS points)
‣ Practical Computer Science (40 ECTS points)
‣ Mathematics (30 ECTS points).

The obligatory elective part consists of 40 ECTS points and allows to select fascinating topics of advanced computer science, like computer graphics, automata and logic, databases, parallel processing, software engineering, or computational linguistics. It is possible to do an internship of 10 ECTS points in the industry. The obligatory complement takes 20 ECTS points and allows to select modules from application subjects like biology, economics, linguistics, logic, mathematics, medical informatics, or physics. In addition, there are 10 ECTS points for key skill qualification modules. The bachelor thesis lasts 23 weeks and counts for 10 credit points.

Graduate Studies in Computer Science

The program requires 4 semesters of study including the time for the master thesis. It consists of modules. Each module lasts one semester and ends with an examination. The student can start the program with the winter or summer semester. There is currently no numerus clausus, i.e. any admissable student will be enrolled.

The graduate program requires a Bachelor degree in computer science or a closely related area. In addition, a qualification test is necessary. Information about this test can be found at

http://www.informatik.uni-leipzig.de/lehre/msceignung.html
(in German)

The graduate program offers an advanced scientific knowledge in computer science, allowing students to take leading jobs related to computer science research and development, and to do research at a university leading to a PhD. The program is designed along the recommendations of the Gesellschaft für Informatik (GI - German Society for Computer

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Science) and has been accredited by the Zentrale Evaluations- und Ak-kreditierungsagentur (ZEvA). The program is split in a basic part, an advanced part, a complementary subject and the master thesis.

The basic part extends the broad knowledge in Computer Science and requires modules of theoretical, technical, practical and applied computer science with 20 ECTS points.

The advanced part (40 ECTS points) gives the oppurtunity to become involved in modern computer science research. The student may choose One out of our four diffrent major topics

- Bioinformatics
- Computational Intelligence
- Medical Informatics
- Software Systems

The complementary subject (20 ECTS points) and the key skill qualification modules (10 LP in computer science or mathematics) offer an education in important application disciplines like biology, economics, linguistics, logic, mathematics, medicial informatics or physics. The master thesis (including master seminar 30 ECTS points) offers the opportunity to practice scientific research.

Polyvalent Bachelor Program for School Teacher

The Leipzig model of Teacher's education requires all teacher trainees that want to become school teachers to study in the same undergraduate program which is followed by a specific graduate program depending on the chosen school level. The masters degree is equivalent to the first Staatsexamen (state law exam for teachers).

The undergraduate program requires 6 semesters of study including the time for the bachelor thesis. The program consists of modules. Each module lasts one semester and ends with an examination. The program starts with the winter semester.

The Polyvalent Bachelor Program for School Teacher requires to select two major subjects. Computer Science can only be selected together with Mathematics. Each major subject accounts for one third (60 ECTS points) of the program. The last third consists of pedagogics (30 ECTS points), the bachelor thesis (10 ECTS points) and the module window (20 ECTS points). With computer science and mathematics as majors, students can select additional modules from these two subjects in the module window.

The major computer science consists of mandatory modules of theoretical computer science (5 ECTS points), technical computer science (15 ECTS points), practical computer science (30 ECTS points), as well ascomputer science didactics (10 ECTS points). The program teaches the basics of computer science as teaching subject in school. The bachelor thesis can be written in mathematics or computer science.

School Type Specific Master Program for School Teacher at Mittelschulen and Gymnasium with Computer Science Major

The Leipzig model of Teacher's education requires students to enroll in a school type special master program after the Polyvalent Bachelor program. With a computer science major, students can enroll in the School Type Specific Master Program for School Teacher at Mittelschulen or in the School Type Specific Master Program for School Teacher at Gymnasium.

The graduate program requires 4 semesters including the time for the master thesis. The program consists of modules. Each module lasts one semester and ends with an examination. Students can start with the winter or summer semester.

In both school type specific master programs, students select two major subjects which need to be the same as in the Polyvalent Bachelor program. Computer science can only be selected together with mathematics. Each major subject accounts for one third (40 ECTS points) of the program. The last third consists of paedagogics (30 ECTS points) and the master thesis (10 ECTS points).

The major computer science consists of one module of computer science didactics (10 ECTS points) and three obligatory elective modules. The student can select form courses in data bases, intelligent systems, computer systems, telematics, natural language processing, theoretical computer science and visualization.
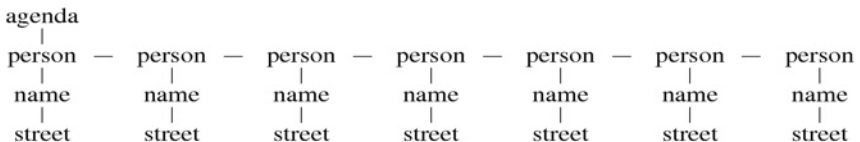
The master thesis can be written in mathematics or computer science.

Algebraic and logic foundations Group
(www.informatik.uni-leipzig.de/alg/) *Prof. Dr. Markus Lohrey*

New applications, arising for example in multimedia data processing or bioinformatics, lead to a massive increase of data. Many different compression methods have been developed in order to store this huge amount of data. In many cases, however, only storing the compressed data does not suffice. Additionally, one might want to analyze it. Think for example of a database consisting of a compressed genome data (DNA sequences). A typical query to such a database is to search for a certain sequence of patterns. In order to solve such a problem one could first decompress the data and then apply an efficient method for pattern matching such as the Knuth-Morris-Pratt algorithm.

The massive amount of the compressed data material, however, makes the decompression a very expensive task, both with respect to time consumption as well as with respect to the storage space needed. Therefore, it is desirable to develop methods for pattern matching on compressed data itself. In fact, such methods exist. In our project we are concerned with investigating the idea, to work directly on the compressed data for other research areas. Such an area is for example XML where the data of interest has a tree like structure. In order to compress such data efficiently completely new algorithms, compared to strings, are needed.

```
agenda
   |
person — person — person — person — person — person — person
   |        |        |        |        |        |        |
 name     name     name     name     name     name     name
   |        |        |        |        |        |        |
street   street   street   street   street   street   street
```

$S ::= \text{agenda}(E(E))$ $C ::= \text{person}(B)$

$E ::= D(D)$ $B ::= \text{name}(A)$

$D ::= C(C)$ $A ::= \text{street}$

In order to compress a tree like structure one can search for a substructure that occurs at least twice. Such a substructure has to be represented only once.

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Applied Telematics / e-Business Group

(http://www.lpz-ebusiness.de) *Prof. Dr. Volker Gruhn*

The Applied Telematics / e-Business Group (LPZ e-business) was established in October 2002 and is endowed by Deutsche Telekom AG at the Institute for Computer Science. Our research and application areas are mobility, software processes, processes in general, and component-based software engineering. These priorities apply in research as well as in industrial projects; partners and customers are hence found in both science and economy.

We conduct research consistently which has lead to a scientific presence with about 20 research publications per year. LPZ e-Business organized the German Software Engineering Conference (SE 2006) and was responsible for local arrangements and co-chairing the program committee of the major international conference of the field, the International Conference on Software Engineering ICSE 2008, which took place in Leipzig from 10 to 18 May 2008.

In the joint research project "MobCo", LPZ e-Business and Deutsche Telekom Laboratories develop a middleware that allows to abstract from the dimension of mobility. Depending on usage behavior, functionality and data are provided directly at the point of service (on the mobile device), without requiring the user to manage synchronization.
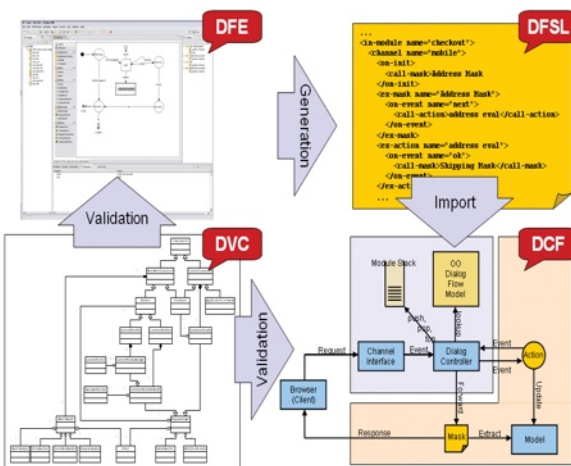
In the joint research project "Dialog Control Project", LPZ E-business and itCampus GmbH have developed two tools, a graphical editor and a runtime framework, that allow specification and the efficient management of complex dialog flows for web applications and offer users an increased usability.

Automata and formal Languages Group

(http://www.informatik.uni-leipzig.de/theo/theo.html) *Prof. Dr. Manfred Droste*

Since computer programs continually increase in size and complexity, they are bound to contain errors that cannot be detected by humans. Is it possible to write programs that check the correctness of other programs?

Already before the birth of computer science, logicians like Alan Turing, Kurt Gödel, and Julius Richard Büchi showed that no computer will ever be able to solve this and many other concrete problems from mathematics and computer science. This gives rise to several questions: Which problems can be solved by computers at all, and how? Can computers at least provide partial solutions to those problems that are too difficult for them? How can we describe the behavior of complex systems exactly and correctly?

Theoretical computer science considers concepts that are foundational for these problems and for the whole of computer science. Doing so, it also provides new techniques "for the future".

Research in our group "Automata and Languages" concentrates on foundational as well as future-oriented questions. To prove the correctness of solutions, we combine methods from algebra, logic, combinatorics, and automata theory. These new techniques are reflected in our teaching, both in lectures and seminars.

We have extensive contacts with other research groups in Europe and overseas and we regularly organize international meetings in Leipzig.
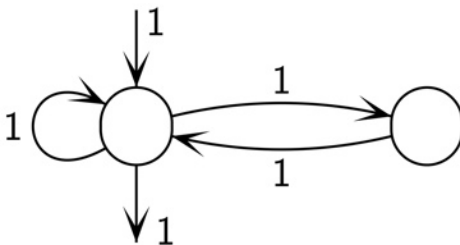
This simple weighted automaton with only two states computes the Fibonacci sequence. Complex weighted automata have applications in natural language processing and in digital image processing.

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Natural Language Processing Group

(http://www.asv.informatik.uni-leipzig.de/) *Prof. Dr. Gerhard Heyer*

Natural language processing is concerned with   data and   methods for the automatic semantic analysis of text, and the applications thereof. In the digital information age, text is available in very large amounts. The exploitation of text as a raw material for knowledge leads up to many new kinds of applications. Our focus of research is on the automatic extraction of semantic relations, their representation and use in information retrieval and knowledge management.

For the bachelor and master courses in computer science at the University of Leipzig, the Group is offering a number of specialist courses on computer science for linguistic applications, including an introduction to natural language processing and language engineering, information retrieval, text mining and content and knowledge management. An increasingly important application is the domain of the E-Humanities where semantic technologies contribute to important new research questions and methods.
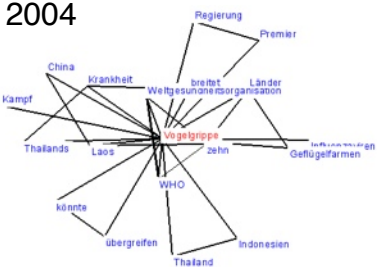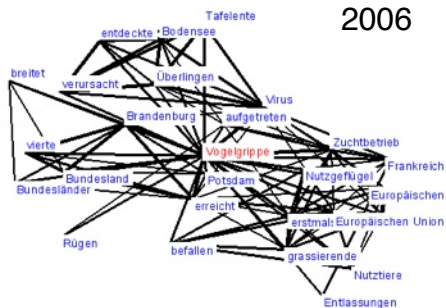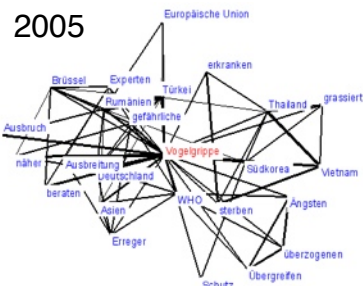

Trend mining is a knowledge oriented service based on text mining for the early detection of technologically or politically relevant trends by analyzing digital information sources. The attached example illustrates the changes of the concept "Vogelgrippe" (bird flew) during the period between 2004 and 2006 based on newspaper texts of the Projekt Deutscher Wortschatz(http://wortschatz.uni-leipzig.de).

Business Information Systems Group

(http://bis.informatik.uni-leipzig.de/) *Prof. Dr. Klaus-Peter Fähnrich*

Our Group focuses on IT-specific tasks in the context of businesses. It is dedicated to research on the use of modern software architectures and tools that support the internal and external communication processes of companies (e.g., Innovation Management, Business Process Modeling and Regulation, Process and Data Integration, Knowledge Management, E-Business). The core research and teaching areas of the Group consists of the fields Services Science, Integration Engineering, Knowledge Management/Semantic Web and Software Engineering. In addition to lectures and seminars, students are given the opportunity to complete practice-oriented thesis works and internships, often in cooperation with partners from the economy.
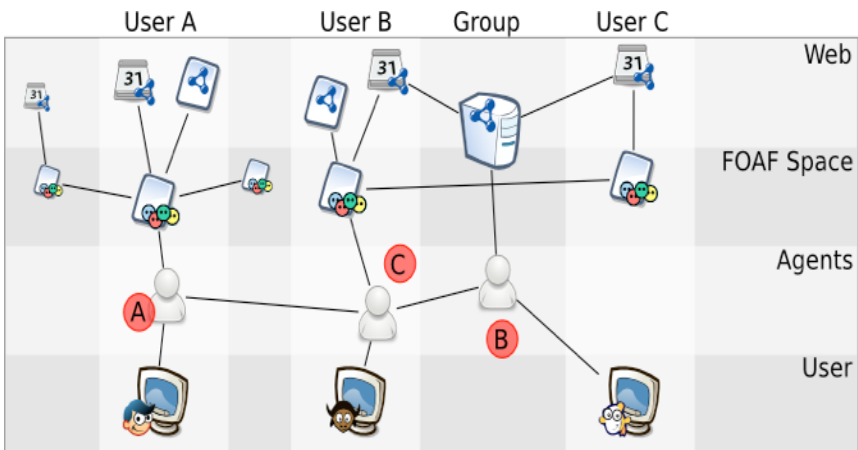

One of our latest Semantic Web applications is the xOperator, which is a Jabber Agent developed for interacting in social network. It was implemented by the AKSW research team. It allows querying large public and self-constructed knowledge bases such as DBpedia or FOAF. The above figure visualizes the different application scenarios of the xOperator as a personal agent [A], als a group agent [B] and a network of agents [C] in a social network.

Image- and Signal Processing Group

(http://www.informatik.uni-leipzig.de/bsv/) *Prof. Dr. Gerik Scheuermann*

Our research concentrates on visualization, the transformation of data from measurements and simulations in images. This process enables humans to easily spot regularities and specialties in the data. The used techniques require an intensive use of computer graphics, image processing and interaction methods. Our research interest concerns four application domains. Flow visualization visualizes simulation data of moving fluids in and around objects to allow engineers and researchers an easier analysis of the physical processes. Medical visualization presents measurements like computer tomography or magnetic resonance imaging in interactive images that allow better diagnosis and surgery planning. In addition, we work on graph and network visualization, e.g. of metabolic pathways, and the visualization of document collections in our group. Interested computer science students can learn the basics of computer graphics, signal or image processing as well as advanced topics of visualization.
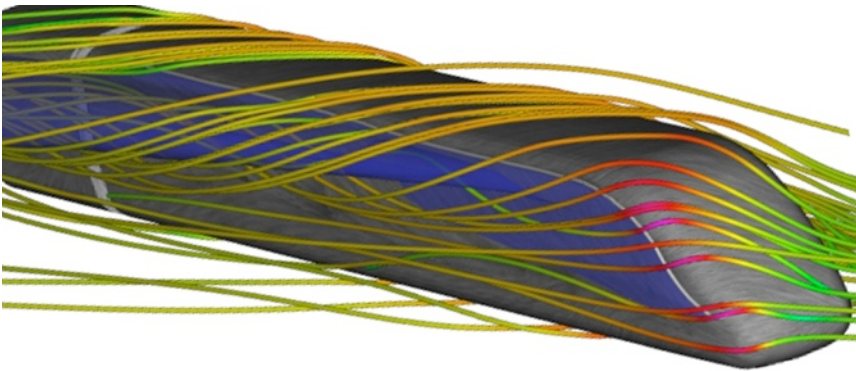
The flow around an ICE train at 250 km/h and a head wind of 30°. One can see the main vortex on the lee side of the train. Important engineering question: Is the pressure reduction by the vortex small enough that the train stags on the track? (Data is courtesy of the DLR Göttingen.)

Bioinformatics Group

(http://www.bioinf.uni-leipzig.de/) *Prof. Dr. P. F. Stadler*

Similar to proteins, non-coding RNAs fullfill a variety of enzymatic and regulatory functions in a cell (Figure: splicosomal RNA U2). Computational prediction and genomic localization of so far unknown ncRNAs in large amounts of genomic data is, therefore, of great importance. Evolutionary models, sequence and structure alignments as well as reconstruction of phylogenetic trees are used to development computer applications which serve to answer biological questions concerning the origin and functional role of processes and forms that can be observed in present day organisms.


(splicosonal RNA U2)

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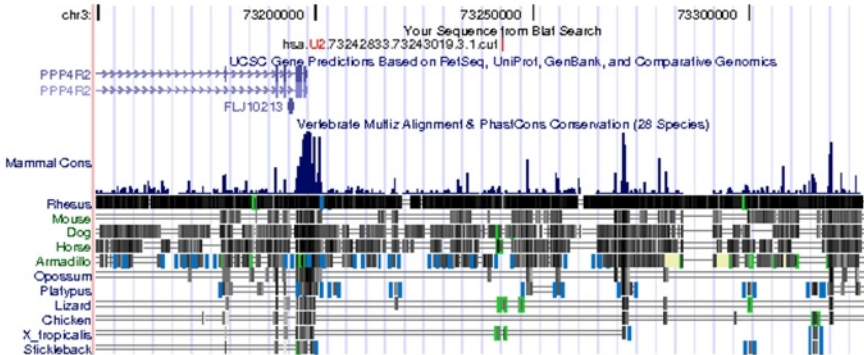
Database Group
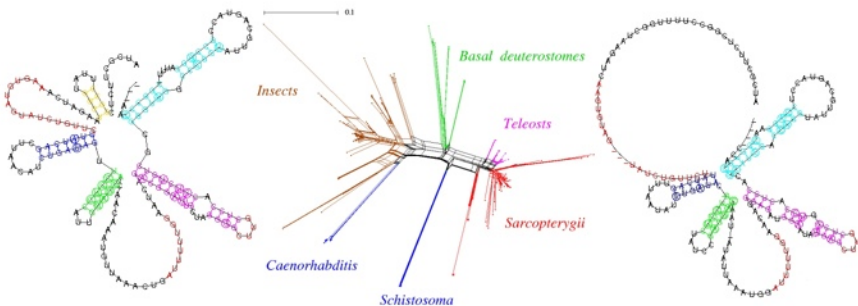
(http://dbs.uni-leipzig.de/en) *Prof. Dr. Erhard Rahm*

Database management is a core subject in computer science. It deals with the efficient, flexible and safe management of very large sets of data. Our research focuses on current challenges for managing web data, integration and consolidation of heterogeneous datasets, and data management for life science applications.

We also consider the management of so-called metadata, i.e. information about the data itself, e.g. about its structure and meaning. We develop novel approaches for automatic matching of diverse metadata, e.g. to facilitate data migration and the analysis of new web data. Furthermore, we investigate self-tuning methods for data cleaning to eliminate data errors and duplicate entries (e.g. for products or persons).

Our research is internationally published and mainly conducted by groups of Ph.D. students within several projects. We also engage bachelor and master students in our investigations. They report on their results within our regular research seminar. In the summer, this seminar takes place at the external university site in Zingst (Baltic Sea).
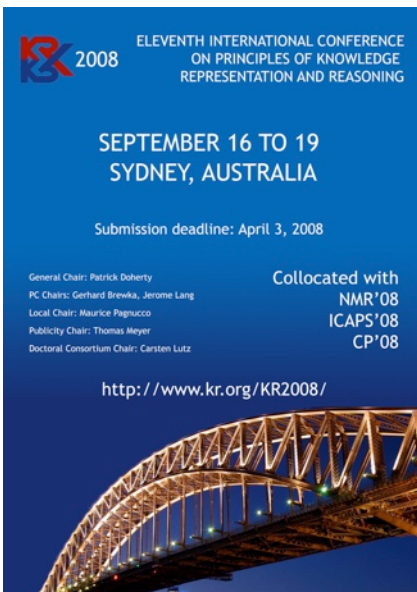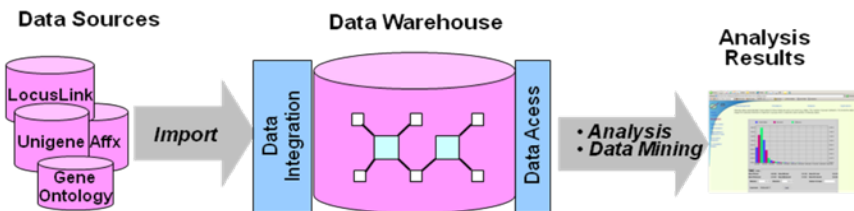

One possible data integration architecture uses so-called data warehouses, that is specially structured databases supporting efficient analysis of very large datasets, e.g. for bioinformatics applications. The data comes from diverse sources and is cleaned and consolidated before it is stored in the data warehouse.

Department of Computer Science

Intelligent Systems Group

(http://isys.informatik.uni-leipzig.de/) *Prof. Dr. Gerhard Brewka*

The goal of Artificial Intelligence is the development of machines which are able to behave intelligently. Research in this area has made tremendous progress over the last decades. Nowadays soccer playing robots compete in world championships every year, autonomous vehicles can cover large distances in the desert without any intervention of a human driver, knowledge based systems support scientists in numerous tasks. Despite these successes we are still far away from artificial human level intelligence.

In order to make technical systems (e.g. robots, autonomous vehicles, web-agents or search engines) more intelligent we have to equip them with abilities for representing and processing knowledge. The Intelligent Systems group investigates languages for knowledge representation and reasoning. Such languages allow for the development of concept hierarchies (ontologies) in a particular domain. This can greatly improve the performance of search engines, for instance, since concepts with similar meaning can be identified. The languages are also able to handle uncertain, incomplete and inconsistent knowledge.


The leading researchers in knowledge representation (KR) meet regularly at international conferences to exchange the most recent results and experiences. Leipzig's Intelligent Systems Group is one of the co-organizers of these conferences. The 2008 KR conference took place in Sydney, as program chair Prof. Brewka was responsible for the scientific program.

Parallel Computing and

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Complex Systems Group
(http://pacosy.informatik.uni-leipzig.de/pv/) *Prof. Dr. Martin Middendorf*

The research interests of our interdisciplinary group are: nature inspired optimization methods, swarm intelligence, organic computing, reconfigurable computing and problems in phylogenies. Nature inspired optimization methods use evolutionary successful principles from nature to solve various optimization problems. One example is Ant Colony Optimization (ACO) which is inspired by the principle of pheromone communication that ants use for finding shortest paths to their food sources. ACO can be used for solving various planning and routing problems. Another example is swarm optimization which uses principles from the collective foraging behavior of bird flocks for function optimization. ACO and swam optimization are both also examples for methods of swarm intelligence. This research field aims to employ ideas learned from the collective behaviour of swarms for developing problem solving methods. Self-organization and decentralized organization are among the main principles which are used. These principles play an important role as well in organic computing which is a research field that intends to develop intelligent systems that posses so-called self-x properties, e.g. self-healing, self-optimizing, or self-adapting. Organic computing utilizes modern hardware, e.g., reconfigurable hardware which can be adapted to the needs of its user or the environment. In the field of phylogeny, we develop algorithms for analyzing the coevolutionary relationships between different species.
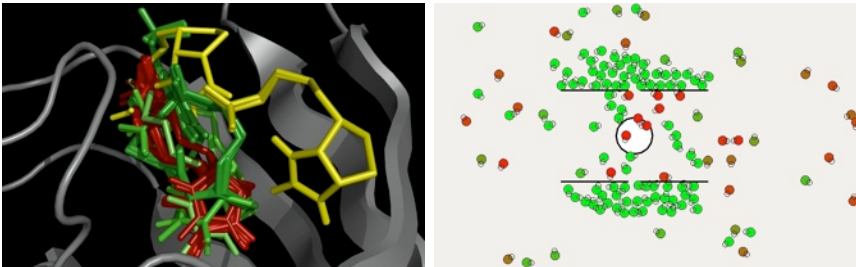

Examples of our research: use of swam optimization for finding docking positions for molecules (left) and simulation of the collective behavior of agents at a service station (right).

Computer Networks and Distributed Systems Group

(http://rvs.informatik.uni-leipzig.de/) *Prof. Dr. Christoph Lindemann*

The primary research focus of the working group Computer Networks and Distributed Systems lies on the wireless next-generation Internet. In the future, the availability of today's wireless Internet applications such as P2P file sharing (e.g. BitTorrent), Instant Messaging (e.g. ICQ) and Internet telephony (e.g. Skype) will not be limited to home PCs, but will rather be ubiquitously available through wireless mesh networks. Mesh networks provide much higher data rates than UMTS (54 Mbit/s vs. 7.2 Mbit/s) at significantly lower costs. However, since such networks possess several properties which are different to the traditional Internet, the exchange of data between wireless devices in a mesh network cannot be simply adopted. In a mesh network, air is used instead of coaxial cables as a shared medium among wireless devices. Such a shared medium results in increased contention between wireless devices since not all devices can simultaneously send and receive data. In our work group we approach these kinds of problems in order to optimize the communication in the wireless Internet of the future and develop suitable state-of-the-art wireless applications.
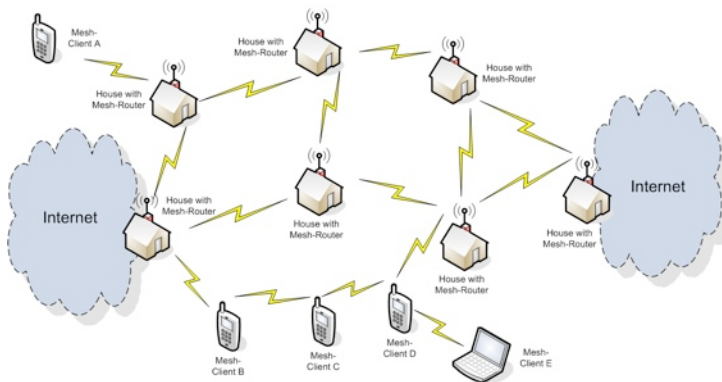

In contrast to traditional wireless networks which are build on conventional IEEE 802.11 access points, in mesh networks, data are forwarded hop-by-hop by multiple wireless stations. Therefore, mesh networks can provide data coverage of up to 3km compared to just 100m for traditional wireless networks. Using a self-designed state-of-the-art prototype, the characteristics of such networks could be analyzed for developing customized software to optimize communication between wireless devices.

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Computer Engineering Group
(http://www.informatik.uni-leipzig.de/ti/) *Prof. Dr. Martin Bogdan*

In the Group of Computer Engineering, the core working area is the transformation of concepts from biological data processing into electronics. In other words, one tries to transfer neural signal processing techniques, like functional principles in the brain, into self-organized and intelligent artificial systems for implementation into hardware. In a first step, this hardware is an embedded system. Using such hardware interfaces between man and machine can be developed. One of them is the Brain-Computer-Interface applications, by which the immobilized patients can regain their ability to communicate with the environment. Moreover, it could be used as a therapy for the stroke patients. Another realization interfacing the biological neural system is shown in the illustration below: a nerve controlled prosthesis driven by signals drawn from the peripheral nervous system. This requires, among other techniques, bio-analogical modelling of the nervous system. Another focus of Computer Engineering is for Robotics. With the aid of special configurable FPGAs holding the implementation of artificial neural intelligence, robots show self-organizing control abilities. Besides, the research team is also concerned with the IT-security in terms of the development and of methodologies for the protection as well as the recognition of attacks on computer and network systems.
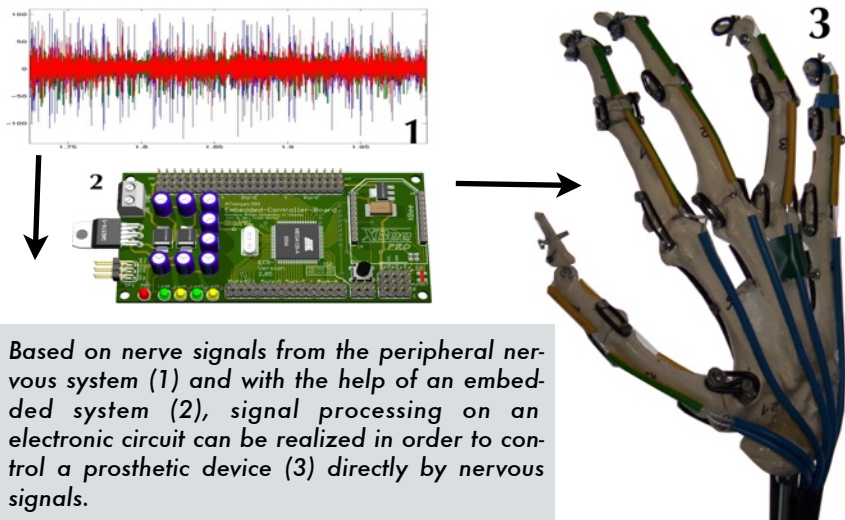
Based on nerve signals from the peripheral nervous system (1) and with the help of an embedded system (2), signal processing on an electronic circuit can be realized in order to control a prosthetic device (3) directly by nervous signals.

Der Fachschaftsrat des IfI
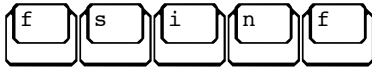
[f] [s] [i] [n] [f] The institute's students form the student body of computer science represented by the respective students council. The council gives support and help for successful academic studies and organizes different kinds of road shows. The student body's common interests are represented in all important boards the council is assigned to.

By organizing annual summer, winter, and LAN parties the council cares for the recreation of the body. The council offers a so called fresher Trip for the first year students at the outset of each academic year so they get to know each other in a relaxing ambiance.

On it's website it offers hints for studying, examination questions, and a great amount of job advertisements.

Contact Us!

Web: http://finsf.informatik.uni-leipzig.de
E-mail: fsinf@fsinf.informatik.uni-leipzig.de
Address: Johannisgasse 26 Room 3-29 (Consultation hours)

Leipziger Informatik-Verbund (LIV)
(http://liv.uni-leipzig.de/)

The Leipziger Informatik-Verbund (LIV) was founded in 1997 as a union of interests of computer science facilities of the University of Leipzig to support their collaboration across the facilities in research and teaching. The members of LIV are university and non-university facilities as well as companies, which are interested in working together in the domain of Computer Science.

The aims of the LIV include:

▸ Organization of collaborative events to facilitate the exchange of information and research results (workshops, seminars, congresses etc.),
▸ Organization and implementation of collaborative research project
▸ Support of activities to facilitate the transfer of technology
▸ Placement of students (theses, internships) in companies and other establishments
▸ Support of the young academic in Computer Science
▸ Support of public relations on the field of Computer Science.

The LIV is the editor of the "Leipziger Beiträge zur Informatik", which is edited and published by the University of Leipzig. In addition to research reports and publisher printed books in the field of innovative and establishing research areas, the LIV publishes dissertations, habilitations and outstanding papers from students.

Students ans speakers at the Games Summer Camp, an inter-discipline LIV Workshop about the topic of video games.

Quelle: Aufbauwerk Region Leipzig GmbH

The Institute for Applied Informatics (InfAI) at the University of Leipzig was founded in 2006. Its goal is to promote research and teaching in the areas of computer science and business computing. InfAI is an affiliated institute of the University of Leipzig and works in cooperation with the faculties of Economics and of Mathematics and Computer Science. The core tasks of the InfAI include research, technology transfer, the organization of lectures and the placement of students.

The InfAI is the interface between all participating faculties. The institute stands for cooperation, diverse competence and high research potential as it makes use of synergies in teaching and collaborative research interests of the affiliated faculties. InfAI also focuses on participating in projects financed by third parties. Furthermore, the institute participates in project charters from local companies and nationwide organizations. Applied research in computer science and business informatics via the organization of workshops, symposia and conferences as well as consulting and mediation completes the prior activities.

For more information visit our webpage http://www.infai.org

UNIVERSITÄT LEIPZIG

Research internships for high-school students at the IfI

Many of Leipzig's high-school students complete their industrial work experience at the IfI. Within two weeks they prepare a small scientific project under guidance of a IfI computer scientist. Topics range from the illustration of the Sierpinski Triangle in fractal geometry over providing a virtual tour of the Leipzig Zoo to investigation of procedures in cryptography. Also so-called "special learning achievements - BeLL" are conducted regularly at the IfI.

Three-dimensional representation of selected fractals. An iterative program to construct fractals of arbitrary refinement.(Max Seelemann and Sascha Grehl, 2005)

A commercial traveler needs to visit 10 cities starting from Leipzig. Each location is to be visited exactly once before he returns to Leipzig. The travel route needs to be optimized for travel time, distance, and costs.(Thomas Blaßkiewitz, 2000-2001)

http://www.informatik.uni-leipzig.de/~meiler/Schuelerseiten.dir/