Newsletter 1/2004

DFKI News

German Research Center for Artificial Intelligence

Pattern Recognition
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KUNGL · VETENSK · AKAD · SIGIL

Prof. Wahlster welcomed into Nobel Prize Academy

CeBIT
HANNOVER
18.–24. 3. 2004

Human – Technology – Innovation

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Announcement: German Language Technologies Summit on May 11, 2004 at DFKI-Saarbruecken

German research in the field of language technologies has established an international reputation for excellence. The targeted efforts of technology transfer are also beginning to bear fruit. An increasing number of commercially promising products and services based on language technologies are appearing in the German economy.

To support the German reputation in the field of language technologies and explore measures to strengthen and improve its representation worldwide, a "Language Technologies Day", a kind of German "LT Summit", will be sponsored by the German Competence Center for Language Technologies at the DFKI together with the German Federal Ministry of Education and Research (BMBF). The event is scheduled to take place on May 11, 2004 at DFKI Saarbruecken.

The key objective of the conference will be to inform the German language technologies community about the services offered by the BMBF sponsored competence network known as COLLATE. Discussions will focus on how this framework may be improved during the current phase of funding which runs to the end of 2005. We are especially pleased that Mr. Hans Albert Aukes, Chief Innovation Officer, Deutsche Telekom AG, has agreed to be the guest speaker for the event.

Detailed agenda and registration at:
www.lt-cc.org

Contact:
Reinhard Karger
E-Mail: Reinhard.Karger@dfki.de
Tel.: +49 (0)681 302-5253
Fax: +49 (0)681 302-5341

Agenda
German Language Technologies Summit

DFKI, Stuhlsatzenhausweg 3, 66123 Saarbruecken
May 11, 2004
Meeting coordinators: Prof. Uszkoreit, Prof. Wahlster

Time	No.	Topic	Speaker
10:30 a.m.	(1)	**Welcome**	Prof. Wahlster
10:35 a.m.	(2)	**Introduction**	Dr. Reuse (BMBF)
10:45 a.m.	(3)	Guest speaker topic: **"Language technologies as innovation motor"**	Hans Albert Aukes, Chief Innovation Officer (Deutsche Telekom AG)
11:15 a.m.	(4)	**The German Competence Center for Language Technologies, COLLATE - Services, results to date, future**	Prof. Uszkoreit (Discussion leader)
12:00 a.m.	(5)	**Speech resources – Services BITS**	Prof. Tillmann (LMU Munich)
12:30 a.m.	(6)	**German language technologies industry desires for COLLATE**	Prof. Uszkoreit (Discussion leader)
1:00 p.m.	(7)	**Branch Get-Together with snacks and system demonstrations at the COLLATE Demonstration Center**	Reinhard Karger (DFKI Foyer)
2:30 p.m.	(8)	**International presence and European cooperation**	Brief statements and discussion
3:00 p.m.	(9)	Closing discussion: **Language technologies "Made in Germany", Opportunities and Challenges in International Competition**	Prof. Wahlster (Discussion leader)
4:30 p.m.	(10)	**End of session**	

Federal Ministry of Education and Research

Human-Technology-Innovation DFKI@CeBIT 2004

Imagine, Experience, and Understand Innovation

DFKI is proud to present Human-Technology-Innovation in the future parc at CeBIT 2004. Innovation in Germany is a political topic in the year 2004. Prof. Wahlster traveled to Berlin for an "idea summit" on innovation at the German Chancellor's office on January 15, 2004. High ranking representatives from business, scientific, and political circles were invited by Chancellor Schröder to participate in this unique exchange of ideas. The topics of the evening's roundtable discussion were the search for new ways to strengthen Germany's powers of innovation and the identification of means by which to insure the continued shine of the "Made in Germany" trademark.

Now, at the special BMBF exhibit, Human Computer Interaction (Hall 11, E 28, F 36), innovative demonstrators from around Germany will include a strong representation by DFKI. On 900 sqm of floorspace, various innovations will be available for hands-on viewing and study, for example, systems like SmartKom. This is a system that can understand and analyze natural speech, gestures and facial expressions. The overall scientific management of the SmartKom project was the responsibility of Prof. Wahlster. During the period 1999 to 2003, the SmartKom consortium included 12 partners from the scientific and business communities in the joint development of systems to facilitate and improve communication possibilities for Human Computer Interaction. The special BMBF exhibit also includes the results of 5 other HCI projects: Service robots, extreme high resolution 3D graphics, virtual factories, digital crash simulation, and the additional presentation of the BMBF project, "Virtual Human". In this project, new solutions are being developed for effective dialog between humans and virtual characters. Experts from DFKI, Fraunhofer IGD, and IMK are collaborating with corporations to create multimodal presentation agents with realistic dialog and emotional responses in speech, gestures, and facial expressions (Hall 11, E 28, F 36).

At the DFKI stand (Hall 11, E 30), examples of data mining and information visualization, knowledge management, and certified IT security methods will be presented. Other systems on display include those that support lifelong learning, e-learning in web-based learning environments, applications for e-government, business process management, and agent-based production optimization. Further, information about security and reliability of communications with IT systems and reliable health information via Internet is available to CeBIT visitors at the DFKI stand.

DFKI is also represented at the Multimedia-Initiative of the State of Saarland and Deutsche Telekom at the University of Saarland stand (Hall 11, E 30/1) where applications for broadband communications developed under the UMTS-Doit project as well as applications for hotspots will be shown. Information about professional learning in the corporation (L3S, Hall 11, C 32) and a system for the simulation and visualization of custom clothing can be seen at the main stand of the BMBF (Hall 11, D 32).

Upon the occasion of the opening CeBIT 2004, Edelgard Bulmahn, the German Minister of Education and Research will host a discussion of the topic "Innovation from Research Projects" with the following panel members: Wolfgang Wahlster, Hans-Jörg Bullinger, President of the Fraunhofer-Gesellschaft, Raymond Freymann, Director, BMW Research and Technology Group, and Ralf Köppe, Executive Board, KUKA Roboter GmbH (future talk Forum, March 18 from 1:45 p.m. to 2:45 p.m. in Hall 11, E 14).

If you are interested in the topics of Human Computer Interaction, speech technology, or intelligent broadband communication and would like to attend lectures or discussions to expand your knowledge in these areas, please mark your calendars for March 19-20, 2004. At the future talk forum (Hall 11, E 14) on these days, futuristic scenarios will be discussed from various perspectives. The coordinator and moderator of this program is Reinhard Karger, Head of Corporate Communications at DFKI.
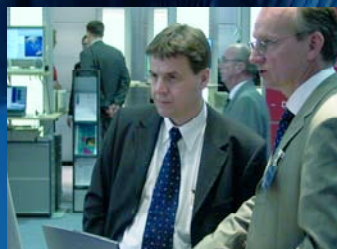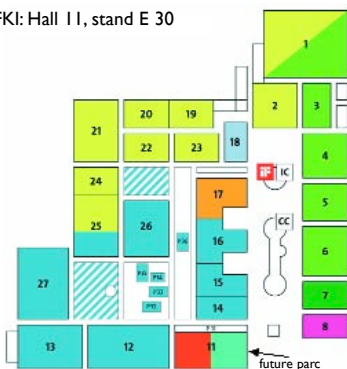
We look forward to your visit with us in the future parc!

Additional information is available at:
www.dfki.de/CeBIT2004

DFKI: Hall 11, stand E 30

The Multimedia Initiative of the State of Saarland together with Deutsche Telekom AG is proud to present the four mobile applications: Personal Multimedia Access, AllergyChecker, Saarland Unwired, and the Lindner Travel Guide at CeBIT 2004 in Hanover, Germany.

Personal Multimedia Access

Personal Multimedia Access – PMA – allows you to access a network-based Multimedia Home Platform from your UMTS mobile phone. As a mobile extension of the entire home entertainment system, it enables you to control each of the various components. Users can watch running videos and program their video recorder from remote locations. Initiated by an EPG (Electronic Program Guide), recordings are transmitted to your UMTS mobile phone in the form of videostreaming. In this way, it is possible to view the program that is currently running and, for example, follow the most exciting scenes of a live football broadcast from wherever you may be away from home. If the viewer finds the game uninteresting, he can perform a remote deletion of the recording to make room for new broadcasts.

Personal Multimedia Access provides access to any device that is integrated with the Multimedia Home Platform system - not only the entertainment components. Recordings of a CCTV surveillance camera for example, can be sent as a videostream to a mobile terminal device.

PMA is developed by the UMTS Doit-Demonstration and Evaluation Center at DFKI in cooperation with the Network Integrated Multimedia Middleware (NMM) project of the Department of Computer Graphics at the University of Saarland. Under the direction of Prof. Philipp Slusallek, a Linux-based infrastructure of hardware and software components was created to permit the integration of a wide spectrum of multimedia devices. The integration of all available networked devices offers a simple way to interface a variety of multimedia functionalities.

The system can be controlled from a mobile terminal, developed by UMTS-Doit, from a Linux component for encoding video and audio data to be streamed using the UMTS-specific 3GPP format. Besides the modified NMM system, PMA uses standard components such as a web application server and a video streaming server.

With networking capacity, Personal Multimedia Access is not restricted to the home environment; it is also applicable in other scenarios where a mobile user can receive support from multimedia information.

For example, the recordings of networked traffic cameras positioned at the approaches to car parks can be called up using video streaming technology. The up-to-the-minute images supplement the information provided by the parking control systems and can help the motorist when looking for a place to park in the crowded, inner city.

AllergyChecker

Mobile broadband applications are not restricted to the area of multimedia as proven by the AllergyChecker, developed by UMTS-Doit in collaboration with Mineway, a DFKI spin-off company.

The AllergyChecker allows you to access, in a matter of seconds, the full listing of all the ingredients in a specific product.

The way this is done is actually quite simple: a camera mobile takes a photograph of the product bar code and sends the picture to a server. The server stores a special database of products with a special, comprehensive focus on biological foodstuffs and cosmetics. The results of the bar code analysis are compared against the individual allergy profile stored at the server. The user will receive either a wa ning about the allergens contained in the product or a reassurance that the product is safe.

The database is also supported by an online lexicon, which the user can access from his mobile to get information about product ingredients or production methods.

Saarland Unwired

Saarland Unwired is a core project that is not only concerned with the employment of UMTS technology, but also with integrating the 3G wireless standard with WLAN and Bluetooth.

In addition to the installation of stationary, publicly accessible hotspots and their extension by means of wireless broadband technologies like Bluetooth, the convergence of UMTS, WLAN and Bluetooth media is being evaluated. Selected city buses will be equipped with wireless broadband technology. The bus, in effect, becomes a mobile hotspot, with an internet connection via UMTS. Inside the moving bus, you will be able to access online or cache information with a mobile phone, PDA, or notebook via the installed WLAN/Bluetooth hotspot.

The experience collected in this pilot project will help design the "always best connected" communications solution for the mobile user of the future. In this way, convergence processes in wireless broad band networks, various locating technologies, and new methods for creating and improving user profiles can be investigated and evaluated in mobile scenarios. Further, expertise can be expanded in the area of data security and protection in mobile applications. Saarland Unwired is available to businesses and individuals alike as a platform for mobile broadband networks. Sharing this know-how with companies in the region – especially SMEs – is an important goal of the project.

Mobile Access Hotel Solution – Lindner Travel Guide

Whoever aims to be at the top of the market in the future, must set an innovative course now. The Lindner Travel Guide is part of a mobile hotel portal, designed to offer guests of the Lindner Hotels AG a broad range of information and services. At check-in each guest is given a mobile phone to carry with them for the duration of the visit. From this phone, guests may call up hotel specific or other tourist information about the respective travel destination, as well as business information, at any time and from any location. Even when outside of the hotel, guests have quick and easy access to restaurants, points of interest, or the closest automated teller machine. Augmented by integrated pedestrian navigation, the hotel guest can easily reach the desired location and be guided safely back to the hotel. The Lindner Travel Guide is continuously updated to reflect current hotel offerings and emphasizes the market lead held by Lindner Business Hotels as a multimedia hotel chain and its role as an innovative trendsetter in the hotel industry.

The Lindner Travel Guide, marketed and developed by T-Systems, is a product of the Multimedia Initiative of the State of Saarland, in collaboration with DFKI and additional partners. Content, among other things, is obtained through the Online-Services of t-info (a 100% owned subsidiary of Deutsche Telekom).

An in-depth seminar on the topic of Mobile Solutions / Lindner Travel Guide is scheduled for Tuesday, March 23, 2004, at 2:50 p.m. in the CeBIT Convention Center, Heidelberg Room.

The Multimedia Initiative can be visited at the Contact Point for Knowledge and Technology Transfer (KWT) of Saarland University (Hall 11, stand E 30/1).
The Lindner Travel Guide will also be available for viewing at the main Telekom exhibit (Hall 26) in the T-Systems area.

Additional information is available at:
www.umts-doit.de
http://graphics.cs.uni-sb.de/NMM
www.networkmultimedia.org

Services offered by DFKI:
Support and consultancy in the development of mobile broadband services

DFKI contact:
Dr. Dietmar Dengler
E-Mail: Dietmar.Dengler@dfki.de
Tel.: +49 (0)681 302-5259
Fax: +49 (0)681 302-5341

T-Systems contact for Lindner Travel Guide:
Armin Scherer
T-Systems Nova GmbH
Systems Integration
Entwicklungszentrum Südwest
Neugrabenweg 4, 66123 Saarbruecken
E-Mail: armin.scherer@t-systems.com
Tel.: +49 (0)651 46042-100
Mobile: +49 (0)171 165 39 35

PROLEARN –
Network of Excellence in Professional Learning

The PROLEARN network of excellence includes 19 international partners under the co-direction of the Learning Lab Lower Saxony and the DFKI, in collaboration with over 100 associated organizations from the fields of research and industry. The purpose is to coordinate European research in the field of professional learning and to focus the activities of talented researchers at the international level.

The emphasis of professional learning is to expand the use of e-learning concepts found in higher education into the professional workplace. Focused on training and continuing education programs for the staffs of small to medium-sized companies as well as the business units of larger firms, this knowledge sharing system is based on the development and implementation of inter-active, customized learning materials.

Research carried out under the PROLEARN project focuses on the application of state of the art technologies for contemporary and future e-learning scenarios and contexts. The purpose is to facilitate corporate training and continued education programs while focusing on the diffe-rent requirements and unique conditions characteristic of SMEs and large enterprises in either the manufacturing or service industries.

You can learn more about PROLEARN at the Learning Lab Lower Saxony (L3S) exhibit in Hall 11, stand C32.

Additional information is available at:
www.prolearn-project.org

Services offered by DFKI:
Project coordination, participation in the PROLEARN Academy, involvement in the work of the PROLEARN Virtual Competence Center, development of business models, process models and European market studies for e-learning purposes, integration of the DFKI's e-learning divisions (Competence Center e-Learning and Lifelong Learning CC) within the wider European context of PROLEARN.

Contact:
Prof. Dr. Dr. h.c. mult. A.-W. Scheer
Institute for Information Systems (IWi) at DFKI
E-Mail: iwi@iwi.uni-sb.de
Tel.: +49 (0)681 302-3106
Fax: +49 (0)681 302-3696

Lifelong Learning

The knowledge society is constantly evolving and individual members who want to participate must continu-ously expand and add to their acquired knowledge and skills. This is the only way for a corporation or busi-ness to develop and remain competitive. Traditional forms of education such as those employed by schools and other attended courses, are time consuming and costly. The individual needs and goals of a single student are seldom considered while the interests of the group must be respected.

Lifelong Learning implies not only the acquisition of knowledge and skills throughout an entire professional lifetime but also the acceptance of new forms of learning. The Institute for Information Systems (IWi) at DFKI explores and develops innovative concepts for Lifelong Learning. This research cluster, in addition to the design of up to date teaching methods for information systems, is also focused on the areas of e-learning and know-ledge sharing.

These subjects are further developed, in terms of information technology, together with external partners in joint projects funded in coopera-tion with institutional, corporate and public sectors.

The research cluster is integrated with several overlapping structural networks having different areas of concentration. For example, PROLEARN – Network of Excellence for Professional Learning, which is oriented on the coordination of European research in the field of professional learning; or the educational network WINFOLine, that has the goal of establishing state and university e-learning networks; and, the Virtual Global University, an association of several universities which offers an on-line postgraduate program (Master of Science in Information Systems).

Services offered by DFKI:
Knowledge transfer, consulting as well as project implementation in the area of e-learning

Additional information is available at:
www.iwi.uni-sb.de
www.winfoline.de
www.prolearn-project.org

Contact:
Prof. Dr. Dr. h.c. mult. A.-W. Scheer
Institute for Information Systems (IWi) at DFKI
E-Mail: iwi@iwi.uni-sb.de
Tel.: +49 (0)681 302-3106
Fax: +49 (0)681 302-3696

Business Integration –
Integrated Business Processes Beyond Corporate Boundaries

Successful management of business processes is characterized by the presence of a methodical modeling system, optimization, and controlling of the individual activities. Heterogeneous applications must be successfully integrated before the seamless interaction between enterprises can be achieved. The challenge is not so much to define and implement common technical standards, but rather, to present complex economic relationships in a manner that can be generally understood. The Institute for Information Systems (IWi) at DFKI has a number of ongoing research projects that are investigating the application field known as Business Integration. The Competence Center for Business Integration (CCBI) coordinates and supports the continuous sharing of all knowledge gained.

Research topics range from strategic applications in value added networks to specific execution and methods for controlling external collaboration. The aim of the competence center's work is the development of new, as well as improved management concepts, models and methods. Integration into available architectures is essential for the partially automated transfer of technical concepts with various application systems. Generic solutions will be integrated into existing standards. Test scenarios and prototypes will be implemented into a variety of established application fields ranging from project management of construction projects to judicial proceedings to integration into banking scenarios.

Additional information is available at:
www.iwi.uni-sb.de • www.ccbi.de

Services offered by DFKI:
Knowledge transfer, consulting as well as project implementation in the area of Business Integration.

Contact:
Prof. Dr. Dr. h.c. mult. A.-W. Scheer
Institute for Information Systems (IWi) at DFKI
E-Mail: iwi@iwi.uni-sb.de
Tel.: +49 (0)681 302-3106
Fax: +49 (0)681 302-3696

Competence Center E-Government –
Process Optimization for the Public Administration Sector

For many years, experts in the field of Public Administration have been interested in the potential contributions that Information and Communication technologies (IC) can make to modernization efforts in this sector. The field of "electronic" or "e-government" is dedicated to considering how the performance of public services could benefit from the many possibilities and opportunities presented with the introduction of state of the art technologies.

At the Institute for Information Systems (IWi), the public domain has been an important topic of research for several years. The establishment of the E-Government Competence Center effectively consolidates and institutionalizes the IWi competencies in the field of public administration. This provides the necessary research infrastructure to pursue the development of scientific methods and models. Central to the philosophy of the Institute is the applicability of business process management concepts to the field of Public Administration. For example, the RAFEG Project (Reference Architecture for E-Government) managed by the competence center seeks to develop a comprehensive reference process model and to implement a prototype for the decision making processes involved in downstream state government agencies.

Under the sixth EU framework program for research, the E-Justice project examines the possibilities to achieve a European-wide security and visualization framework for the judicial branch. The role of the IWi concentrates on developing the methodology and the business process modeling of those activities commonly found in the judicial branch.

Additional information is available at:
www.iwi.uni-sb.de
www.e-government-cc.org

Services offered by DFKI:
Knowledge transfer, consulting as well as project implementation in the area of e-government

Contact:
Prof. Dr. Dr. h.c. mult. A.-W. Scheer
Institute for Information Systems (IWi) at DFKI
E-Mail: iwi@iwi.uni-sb.de
Tel.: +49 (0)681 302-3106
Fax: +49 (0)681 302-3696

AGENTSTEEL –
Process Engineering with Multiple Agents for Steelworks

The research conducted under the AGENTSTEEL project focuses on production planning and coordination of the processes involved in the supply network for the steel industry. The main area of investigation will be model driven or service oriented architectures to be defined in ATHENA. Of particular interest is the role agent-based technologies could play in this environment. Project AGENTSTEEL was established against this background to pursue the technological research and development of a planning and control system for the production of steel.

Objectives
The overall objective mentioned above may be broken down into two sub-objectives. These will be investigated in a two-phased project:
• Planning and control of the production processes employed at a steel mill
• Planning and control of the supply chain - from pig iron suppliers to the steel and rolling mills and the downstream processing businesses.

The major task will be the development of a flexible, planning and control architecture that is able to dynamically respond to the changing requirements of complex internal production processes. Flexibility is demanded by changing market conditions as well as the unpredictable variations in the quality and quantity of available pig iron. Early results will be incorporated into MATS II, a cooperative pilot project of DFKI and Saarstahl AG.

Services offered by DFKI:
Dynamic, flexible planning methods for steel production; agent-based coordination of the planning and control of the complete value added chain.

Contact:
Dr. Klaus Fischer
E-Mail: Klaus.Fischer@dfki.de
Tel.: +49 (0)681 302-3917
Fax: +49 (0)681 302-2235
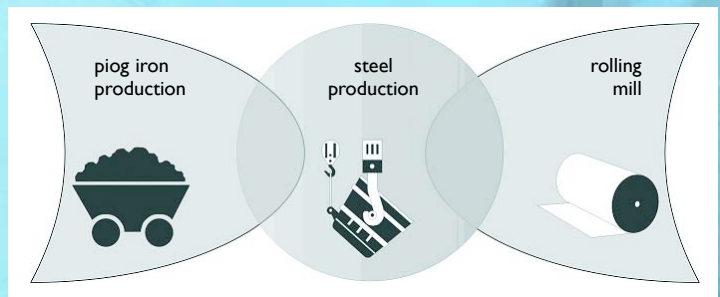
ATHENA –
Advanced Technologies for Interopererability of Heterogeneous Enterprise Networks and their Application

Increased cooperation among enterprises throughout the entire product lifecycle appears to be a global trend. Organizations are experiencing a period of change and there seems to be an ongoing transition into "networked organizations". To facilitate the seamless integration of business processes that extend beyond the boundaries of a single company or organization, applications and IT infrastructures must be interoperable.

ATHENA, based on technical specifications, prototypes, regulating guidance, and proven methods, is to consolidate and present a common, European knowledge warehouse of technical innovations in the area of interoperability. In keeping with its general aims, DFKI will actively pursue opportunities to make existing research results available for industrial applications at an early stage.

Interdisciplinary cooperation on the ATHENA project is contributed by the Institute for Information Systems (IWi) at DFKI and the Multi-Agent Systems (MAS) Research Group. Know-how in the area of process optimization enables the IWi Competence Center for Business Integration (see page 7) to propose new concepts of how to achieve the integration of collaborative business processes. The MAS Group develops innovative, interoperable business software platforms using the technologies of agent-based service oriented and model driven architectures.

ATHENA (**A**dvanced **T**echnologies for **I**nteropererability of **H**eterogeneous **E**nterprise **N**etworks and their **A**pplication) project, with SAP as the lead manager, is part of the sixth EU framework program for research.

Additional information is available at: www.athena-ip.org

Services offered by DFKI:
Development of software architecture based on multi-agent technology

Contact:
Dr. Klaus Fischer
E-Mail: Klaus.Fischer@dfki.de
Tel.: +49 (0)681 302-3917
Fax: +49 (0)681 302-2235

MATS II –
Multi-Agent Technologies for the Steel Mill Management

Flexible planning and execution, as well as the rapid reorganization of operations following interruption, are the absolute prerequisites to remaining competitive in the industrial markets.

In a joint project between Saarstahl AG and DFKI, a prototype planning system is being developed for the steel industry. By employing multi-agent technology as an artificial intelligence planning method, technological and organizational limiting factors may be considered and monitored during the planning process.

photo: Saarstahl AG

The core process of all material flow is the production planning for the various units of a steel production facility. This is determined by the requirements and orders of the rolling mills and the supply status of the furnaces. Short range planning for the steelworks is based on a daily planning target. The model's task is to optimize the aggregate planning and the production capacity at the steelworks as well as the return to rough planning targets following any interruption in the production cycle. As part of a feasibility study, a demonstrator was developed to serve as the initial basis for the implementation of a prototype application. This system supports the management of the Völklingen steelworks by recording continuous data from the steelworks and comparing it against a calculated daily target. It also provides early identification and correction of interruptions. Long term goals include a complete agent-based supply chain management system that will plan and monitor the flow of materials along the entire production cycle of Saarstahl AG.

Services offered by DFKI:
Generic, agent-based solutions in support of production planning and control of the Völklingen steelworks of Saarstahl AG

Contact:
Dr. Klaus Fischer
E-Mail: Klaus.Fischer@dfki.de
Tel.: +49 (0)681 302-3917
Fax: +49 (0)681 302-2235

saarstahl

ActInMath –
User-Adaptive, Interactive E-Learning

ActInMath is a web-based, interactive learning environment. Various learning content is already prepared for subjects ranging from fractions to statistics; others are still to be created. ActInMath on-line courses are ideal for use at schools and colleges, or for independent learning purposes.

The system is user-adaptive. This means courses may be tailored to fit the individual student's situation. The speed of learning, the depth of content and even the method of organizing the materials are all considered when generating courses to meet the different needs of each type of student. This is implemented by a system that enters, saves and updates the student's unique personality, goals, activities, preferences and level of prior knowledge. In this way, ActInMath courses are reusable and always take into account the student's current knowledge of the subject and different learning aims when preparing the materials.

The adaptivity of the system extends to various didactically motivated dimensions. For example, the selection of exercises and examples in the learning content, the number, type and degree of difficulty of the exercises, the nature of the learning objectives, the type of presentation (appearance, detail) and the form of output (computer screen or print) are designed to adapt to specific user requirements.

Various interactive tools facilitate active and exploratory learning on the basis of intelligent feedback: Service systems used to date are: Maple, Mupad, Yacas, Gap (computer algebra systems), SPSS, R (statistics software) and Omega. The e-learning environment of ActInMath is not limited to mathematical subjects. The course content can also be expanded and exchanged as desired.

Presently, development is continuing on the ActInMath learning environment to produce a third generation intelligent tutoring system and, under the auspices of the sixth EU framework program for research, the "LeActiveMath" project is being tested under actual conditions in a number of European countries.

Additional information is available at:
www.actinmath.org,
www.activemath.org

Services offered by DFKI:
Planning and installation of the ActInMath system, new learning materials support, integration of learning modules, consulting for e-learning systems and tools, development of new e-learning tools

Contact:
Dr. Erica Melis
DFKI and Saarland University
Tel.: +49 (0)681 302-4629/5276
Fax: +49 (0)681 302-2235
E-Mail: Erica.Melis@dfki.de

DaMiT –
Data Mining Multimedia E-Learning

DaMiT is an e-learning system designed to facilitate data mining. Data mining is concerned with extracting valuable business or scientific information from large and, in general, distributed data bases.

Successful data mining means a source of cash and profits for a company. However, data mining is not easy. Extensive know-how and ability is required in addition to a highly developed sense of direction which qualifies the topic as a science as well as an art. In DaMiT, we study the science and practice the art.

DaMiT was designed to assist university studies, continuing professional development, and corporate training programs. Anonymous users can access DaMiT from the Internet and use it to their advantage throughout a lifelong learning process.

DaMiT offers theoretical knowledge in addition to practical case studies. Students explore a problem area for data mining and access professional software that aids in finding the solution to actual data mining tasks – "Learning by Doing". This is a user-adaptive system and supports individual learning goals.

Using the DVDconnector supplied by micronomics AG as an access tool, DaMiT combines the media qualities of a DVD with the timeliness, flexibility, and adaptivity of e-learning. Both media are thoroughly geared toward one another making it possible, for example, to jump from a high resolution video to web based services. DaMiT integrates internet functionality with media quality and didactics.

Additional information is available at:
http://damit.dfki.de

Services offered by DFKI:
Consulting in the area of data mining for business applications,
e-learning in the area of data mining, intensive courses,
operational training, decision support in the purchase
of data mining software, consulting for
e-learning technologies

Contact:
Prof. Dr. Klaus P. Jantke
E-Mail: Klaus_P.Jantke@dfki.de
Tel.: +49 (0)681 302-5373
Fax: +49 (0)681 302-2235

IT Security Testing Laboratory

The test center for IT security at DFKI (PITS) is accredited by the German Federal Agency for Information Technology Security (BSI) in the area of ITSEC (Information Technology Security Evaluation Criteria) and CC (Common Criteria for IT Security Evaluation). With expertise in formal methods and the use of innovative procedures and tools, the test center is particularly well qualified to perform evaluations requiring high certification standards (i.e., E4 ITSEC or EAL5 CC).

As a separate organizational unit of the DFKI, the test center for IT security is an independent, objective, and reliable partner for all subjects related to the evaluation of software products and systems. Strict observance of the principles and norms of quality management guarantees our customers the highest quality, in addition to confidentiality and reliability.

The test center for IT security evaluated the FlexiTrust product of FlexSecure GmbH as required by signature laws and according to the Common Criteria for IT Security Evaluation (ISO/IEC 15408). As the highest, federal agency for the certification of electronic signatures, the German Regulatory Authority for Telecommunications and Post (RegTP) operates the FlexiTrust product under the framework of its Trust Center software modernization program. The RegTP was able to receive certification that guarantees secure and reliable operations at the national Trust Center well into the future.

Additional information is available at:
www.dfki.de/pits
www.dfki.de/siso

Contact:
Dr. Oliver Keller
E-Mail: Oliver.Keller@dfki.de
Tel.: +49 (0)681 302-5327
Fax: +49 (0)681 302-2235

Services offered by DFKI:
Evaluations according to the requirements of CC and ITSEC
Support in the preparation of protection profiles
and security targets per CC
Support of IT security management
Training in the area of software development
per CC and ITSEC

Roland Vogt
E-Mail: Roland.Vogt@dfki.de
Tel.: +49 (0)681 302-4131
Fax: +49 (0)681 302-5341

Human Computer Interaction at CeBIT 2004

Video recorders that understand which programs to record based on a voice command? Reserved seats at the theater by pointing to them? Close the curtains in the rooms with a southern exposure by calling home from your cell phone? Simply put on your data glasses to gain an understanding of a complex technical unit? Have your drinks served by a robot?

A visit to the future parc at the CeBIT 2004 (Hall 11, E 28 and F 36) will show you how these and many other scenarios may become routine in the future. There, six pilot projects from the "Human Computer Interaction" program sponsored by the Federal Ministry of Education and Research (BMBF) and BMWA will present their demonstrators and prototypes on 900 sqm. of floor space.

In 1998, confirmed by the success of the joint research project "Verbmobil", a system for the translation of spontaneous speech developed under the management of DFKI from 1993 to 2000, the BMBF initiated the Human Computer Interaction (HCI) program. Five of the projects are within the scope of the original BMBF program while the sixth project is sponsored by the Federal Ministry of Economics and Labor (BMWA).

HCI Highlights:

SmartKom
Multimodal, interactive dialogs with a life-like character. Contextual understanding of imprecise, ambiguous, or incomplete multimodal inputs at the semantic and pragmatic levels.
(www.smartkom.org)

ARVIKA
Mobile system for combined real/virtual working environments. Practical design concepts for augmented reality (AR) systems.
(www.arvika.de)

EMBASSI
Intelligent user interfaces for consumer electronics. Customizable access to public terminal systems for the handicapped.
(www.embassi.de)

INVITE
Combination of intuitive visualization and personal navigation, semantic search, automated classification and implicit knowledge acquisition.
(http://invite.de)

MORPHA
Service robots for private home use or in a production environment. Rapid and intuitive programming.
(www.morpha.de)

MAP
New concepts for the integration and use of computers in mobile activities.
(www.map21.de)

From 1999 to 2003, BMBF and BMWA provided a total of € 82.6 million in funding to support this research. Total funding is € 152.2 million.

The results far surpass the original research goals. There are already 116 patent registrations, 56 spin-off products, and 13 start-up companies spun off from the consortium. In addition, over 850 scientific papers have been published.

These six projects have helped place Germany at the forefront of international research in the field of Human Computer Interaction. Representatives of each of these projects will be presenting their innovations and results at the special HCI stand at the CeBIT 2004.

DFKI contact:
Reinhard Karger
E-Mail: Reinhard.Karger@dfki.de
Tel.: +49 (0)681 302-5253
Fax: +49 (0)681 302-5341
Mobile: +49 (0)177 242 21 18

SmartKom –
Multimodal Human Computer Interaction

Human beings communicate by talking, listening and watching one another in dialog. Computers have long been able to understand commands and operating instructions but, until now, couldn't watch and listen and comprehend the desires of human beings.

During the period 1999 to 2003, the Smart Kom consortium, with membership from the scientific and business communities, attempted to develop a system in which a much wider range of natural communication scenarios could be applied to Human Computer Interaction. Partial funding for the project, in the amount of € 16.5 million, was provided by the Federal Ministry of Education and Research (BMBF) of a total volume of € 25.5 million.

The Smart Kom intuitive user interface has been achieved through the integrated processing of speech, gestures and facial expressions. SmartKom listens and understands, then looks and recognizes whether the user is angry or content. The system also responds to a pointing finger so the need for a mouse or a keyboard is eliminated.

At the CeBIT 2004, SmartKom will be presented as part of a special Human Computer Interaction (HCI) exhibit in the future parc, located in Hall 11. Three different applications, Smartkom Mobile, SmartKom Home and SmartKom Public will be shown. The most important project results will be on display.

One of the highlights is sure to be the mobile version of SmartKom. Using only their voices and gestures, pedestrians and drivers will have access to extensive information and navigation services - without using a mouse or a keyboard. Various Smart Kom functions are demonstrated in a Mercedes concept car while on a virtual drive into Heidelberg. For the first time ever, SmartKom has succeeded in integrating free speech dialogs between the user and a digital "attendant" with a navigation system. After arriving at the destination, the system converts to a pedestrian navigation system and guides the user on foot from the parking lot to the next destination. The system even answers questions about points of interest along the way.

In the "Home" scenario, SmartKom is the control component in a networked living room. For example, to record a television program the user can either program his video recorder by voice: "Record Your World Today on CNN this evening" or, easier still, simply place a finger on the desired program in an electronic listing and say "Please record this program."

An innovative communication medium, the SmartKom prototype "Public" was designed for use in areas open to the public: With the assistance of a life-like character named Smartakus, users can plan their next trip to the movies – from information about films, to reservations, to directions to the theater. Intelligent IT security solutions play an increasingly important role in this area in order to protect personal data from unauthorized third parties. Multiple biometric parameters are now being tested in the SmartKom-Public prototype. In order to determine access privileges with certainty, several digital biometric methods are used. Users identify themselves not only by a signature or a hand print, but also with a personal speech pattern. Voice verification over the telephone is already offered as a marketable product by SmartKom-Partner MediaInterface GmbH of Dresden.

With 52 registered patents, 29 spin-off products, and 6 spin-off companies, an impressive portion of the SmartKom know-how has found its way into the German economy. "SmartKom is the most successful of all the 29 research projects initiated since 1998", said Dr. Bernd Reuse, Head of Unit "Software Systems" at BMBF.

Coordinated by the German Research Center for Artificial Intelligence (DFKI), twelve research groups representing industry, academia, and research institutes are cooperating in the Smart Kom consortium. They are listed below:

German Research Center for Artificial Intelligence GmbH, DFKI (consortium management)
DaimlerChrysler AG
EML, European Media Laboratory GmbH
FAU, Friedrich-Alexander University of Erlangen-Nuremberg
ICSI, International Computer Science Institute
IMS, Institute for Machine Processing of Speech, University of Stuttgart
LMU, Ludwig-Maximilian University of Munich
MediaInterface Dresden GmbH
Philips GmbH
Siemens AG
Sony International (Europe) GmbH
Sympalog Voice Solutions GmbH

DFKI contact:
Dr. Anselm Blocher
E-Mail: Anselm.Blocher@dfki.de
Tel.: +49 (0)681 302-5262
Fax: +49 (0)681 302-5341

Additional information is available at: www.smartkom.org

Services offered by DFKI:
Development and integration of innovative multimodal dialog systems: Integration framework for heterogeneous distributed systems, robust speech and dialog processing, adaptive visualization technologies.

Virtual Human –
Anthropomorphic Interactive Agents in Knowledge Management

We are not surprised to bump into digital figures in the World Wide Web, in commercial advertisements, in interactive computer games or as digital mail carriers. However, such virtual characters are generally severely limited. Most of them have only a minimal communication – usually via keyboard input – capability. Any interaction with the animated character usually ends in time consuming delays.

DFKI, in cooperation with its partners, is presenting an alternative for the future: the BMBF project Virtual Human - part of a special exhibit called Human Computer Interaction – can be seen at the future parc located in Hall 11. The project is searching for new efficient solutions that will allow dialog between humans and virtual characters. Research and development experts are creating realistic, multimodal presentation agents endowed with emotional behaviors in speech, gestures and expressions.

Anthropomorphic interactive agents have enormous potential in the field of education. A wide variety of learning and knowledge content used in higher or continuing education or e-government can be intuitively and more effectively presented. Or, when a customer at a virtual shopping mall wants to receive – either at home or per mobile end device – the exact answer or some individual consulting, he may be interactively guided through multifaceted market places.

The technological challenge of designing Avatars as partners in interactive dialog is many times greater than that of animating film figures. Not only detailed anthropomorphic features go into the design of an Avatar, but also of central importance are the realistic, interactive behavior and exact simulation of movement in real time as well. A virtual, interactive partner must react sensibly to the situation and subject matter and must recognize the individual speech or behavior patterns of the real life partner and then respond appropriately to their wishes or base of knowledge.

The first innovative step to achieving this has been implemented using the scenario of the "Virtual Teacher". In this project, a digital character operating in a simulated environment - in this case, a planetarium - conveys complex, physical relationships to students in an innovative and interesting way, a manner that would not be possible in a real class room. Based on the content selected, the teaching method, the presentation style, and the speed of learning, each dialog is dynamically adjusted to fit the interests, preferences and abilities of the individual user. "Virtual Human" makes high quality, multimedia presentations possible.

DFKI leads an interdisciplinary "Virtual Human" project team with representatives from the Fraunhofer Institute for Computer Graphics Research (FhG-IGD) and the Computer Graphics Center (ZGDV), Darmstadt, the Fraunhofer Institute for Media Communication (FhG-IMK), Sankt Augustin, as well as the corporate partners OTLO VR Systems, Rostock, Charamel GmbH, Köln and [rmh] - new media GmbH, Köln. The research project, with € 7 million in funding provided by the Federal Ministry of Education and Research (BMBF), is scheduled to last four years (2002 – 2006).

Additional information is available at:
www.virtual-human.org

Services offered by DFKI:
The spectrum of services includes everything from consulting on the design of applications with animated agents to the implementation of affective behavior models and agents equipped with speech and dialog capabilities.

DFKI contact:
Dr. Anselm Blocher
E-Mail: Anselm.Blocher@dfki.de
Tel.: +49 (0)681 302-5262
Fax: +49 (0)681 302-5341

MobileMine –
Text-Mining as a Market Analysis Tool
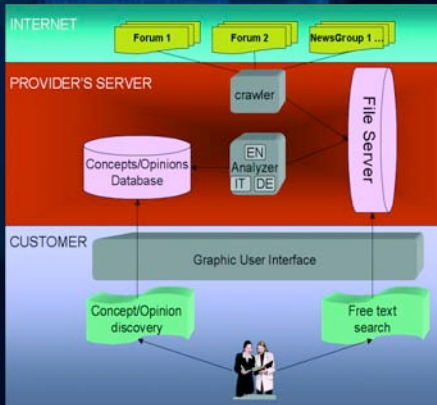
MobileMine is a system to monitor the customer opinions expressed in public Internet forums and newsgroups regarding all sorts of products - from consumer electronics to mutual funds. The system is appropriate for use by marketing, sales or quality management professionals. This innovative tool offers such users a means to better evaluate subjective opinions about the value and quality of a product and is certainly a source of inspiration for new and effective marketing concepts.

MobileMine automatically identifies relevant terms like brand names, product descriptions or product classifications, and presents the results in statistical graphic form. Positive and negative opinions about these terms are extracted making it relatively easy to determine what level of acceptance the product has achieved. Customer views on the benefits and problems indicate areas for product improvement and promising future development efforts.

MobileMine is a joint development of DFKI and the Italian company CELI (Language and Information Technology s.r.l.). Based on the multilingual text mining architecture of ArgoServer, document collections may be continuously monitored. The advanced technologies employed for multilingual information extraction far surpass the linguistic capabilities of earlier, simple pattern matching techniques. Detailed opinion profiles may be created and modified according to various criteria.

The demo configuration selected for display by DFKI at CeBIT 2004, extracts and monitors customer opinion concerning mobile phones in English, Italian, or German language forums and newsgroups. The identification of public perceptions about a certain part or function of the mobile phone allows the creation of an exact and to the point opinion profile. The information is then associated with the subject product so the MobileMine user obtains detailed statistics about every relevant market sector.

The software architecture of MobileMine consists of three layers:
Highly advanced methods of information extraction and web-crawling insure the data base is always current. Access to the data base is via an individually configured Content Management System. The web based interface insures access regardless of platform in use.

Services offered by DFKI:
Linguistically based methods for market analysis

Additional information:
www.celi.it

Contact:
Dr. Melanie Siegel
E-Mail: Melanie.Siegel@dfki.de
Tel.: +49 (0)681 302-5288
Fax: +49 (0)681 302-5338

Imprint

MedCIRCLE Infobar –
Evaluated Health Information Online

The MedCIRCLE Infobar is an extension of the Internet Explorer designed to assist the user in finding high quality health information. In this EU Project, health related web pages are annotated with a special vocabulary (HIDDEL, Health Information Disclosure, Description and Evaluation Language) based on internationally agreed guidelines ("Code of Conduct") for the creation of health related websites. Semantic web technologies (Ontologies, XML, RDF) are employed to put machine-understandable annotations on the web and to make the proprietary systems of the various health portals interoperable.

MedCIRCLE Infobar lets users formulate their HIDDEL preferences in English, Spanish, French or German. When the user visits a website, the MedCIRCLE Infobar searches the open RDF directory for annotations, compares these to the user preferences and calculates a confidence interval that reflects the reliability of the subject website and its authors. From the MedCIRCLE Label Window users obtain detailed information about the visited site and may, if desired, contact the authors of the annotations.

The goal of the MedCIRLCE Infobar is to promote an awareness of quality concerning health information, or (web)information in general, and not just for the users of the information but for the authors as well.

Project partners in MedCIRCLE are: University of Heidelberg, Clinic for Social Medicin (Project coordinator:); Ärztliches Zentrum für Qualität in der Medizin (AQUMED), Cologne, Germany; Centre Hospitalier Universitaire de Rouen (CIS-MEF), France; Colegio Oficial de Médicos de Barcelona (COMB), Spain.

Additional information is available at:
www.medcircle.org

Services offered by DFKI:
Competency in the area of knowledge modeling using semantic web methods, especially for the modeling of quality data. Tools for easy access to website annotations with case-based reasoning technology.

Contact:
Dr. Thomas Roth-Berghofer
E-Mail: Thomas.Roth-Berghofer@dfki.de
Tel.: +49 (0)631 205-4820
Fax: +49 (0)631 205-3210

INKASS – Intelligent Knowledge Asset Sharing and Trading

Virtual market places, auction portals and online sales platforms are well established forms of e-commerce. The basic technological know-how required for construction, functionality, and security has been available on the market for a long time. However, what happens when it is not just the market place, but also the item being traded, that is virtual?

The INKASS (Intelligent Knowledge Asset Sharing and Trading) project has developed an intelligent, Internet market place for the exchange of knowledge assets. Challenging aspects, such as the valuation of knowledge and the control of ownership and use are also investigated. What we tend to take for granted in physical items, namely, their description, becomes problematic for intangible products. Using modern methods of knowledge management, the knowledge content of texts, tutorials, or projects can be described in a way that the benefits will be recognizable outside the immediate context of the source.

The solution oriented system is instructed to answer problem focused queries using knowledge assets. Tuning the system to the needs of the knowledge seeker requires - to use a somewhat inexact term - a great deal of "system maintenance" from the beginning. KAFKA, the intelligent INKASS component, examines and interprets the content of the knowledge assets that are entered; analyzes the queries, procedures, and (re)actions of the knowledge seeker and, based on what it learns, evaluates content in terms of structures stored in the system.

The system component called JUDGE, a document classification and mining software, is already available. But, mastering all these aspects together touches upon complex, scientific issues.

Services offered by DFKI:
Consulting and know-how in the area of ontological database preparation and use; project planning and implementation.

Contact:
Bertin Klein
E-Mail: Bertin.Klein@dfki.de
Tel.: +49 (0)631 205-3450
Fax: +49 (0)631 205-3210

MPEER –
Mobile Music Search Via Internet

MPeer

Thanks to semantic web technology and modern methods of automated music analysis, your MPEER computer becomes a personal music assistant.

The mobile application MYMO enables leading PDAs to search the contents of extensive data files for music via wireless LAN or cellular phone network. The application relies both on knowledge based background information, as well as fully automated procedures to extract important characteristics of music titles, such as volume, tempo, instrumentalization and typical genre tones. The interaction of collaborative filtering procedures with a music data base, for example, an international online provider, allows the user to search by artist, album, or title. Further, the assistant even prepares personalized list of suggested music that may also be of interest. Even texts and cultural features may be considered which was not possible with earlier approaches.

The sophisticated user design of MYMO takes into account the limitations of small screen displays and the lack of a keyboard on PDAs. With just a joystick and a minimum of search commands, the user can call up the desired music samples and recommended artists online.

Operating in the background, invisible to the music lover, is the complex interaction of software agents exchanging messages on the basis of a common music ontology which prescribes the vocabulary and the semantic relationships. Further development of the system envisions the implementation of location sensitive services that will suggest concert information and club addresses for specific cities.

Additional information:
www.dfki.de/mpeer

Services offered by DFKI:
Consulting, concept design and prototype implementation in the field of mobile or stationary access to music data in the semantic web.

Contact:
Stephan Baumann
E-Mail: Stephan.Baumann@dfki.de
Tel.: +49 (0)631 205-3447
Fax: +49 (0)681 205-3210

New Research Department
"Image Understanding and Pattern Recognition"
Direction Prof. Dr. Thomas Breuel

In November 2003, DFKI expanded the scope of its Kaiserslautern research programs to include a new topic: "Image understanding and pattern recognition".
Prof. Dr. Thomas Breuel, director of the new department said, "Sight is the most important of our senses, while computers are almost totally blind. Our goal is to teach computers to see. This will fundamentally change the way we use computers, making it easier and leading to new fields of application. Computers able to understand images may soon support users as intelligent assistants, relieving the user from tedious or difficult searches and management tasks that involve large volumes of data."

Potential applications are to be found in the following areas: Human Computer Interaction and Information Retrieval (IR), document administration in companies and government agencies, security and monitoring, digital video cameras and photographic instruments, industrial manufacturing and intelligent transportation.

Thomas Breuel is 38 years old and is a native of Hanover, Germany. He studied at Harvard University (Cambridge, USA) and earned his Ph.D. from the Massachusetts Institute of Technology (MIT, Cambridge, USA). His experience includes research at the IDIAP Institute (Martigny, Schweiz), IBM-Almaden Research Center in San José, California and at the Xerox PARC (Palo Alto, USA). He is the founder of a start-up company in Silicon Valley working in the area of web-based collaboration. Prof. Breuel has also developed new technologies and software applications for handwriting recognition for the U.S. Census Bureau.

**Additional information
is available at:**
www.dfki.de/~breuel

Contact:
Prof. Dr. Thomas Breuel
E-Mail: Thomas.Breuel@dfki.de
Tel.: +49 (0)631 205-3216
Fax: +49 (0)631 205-3472

SIMILAR – Intelligent Visualization of Information via Mobile Phone

SIMILAR Project SIMILAR is concerned with the development of a scalable mobile information visualization system. The system can visualize existing data stored on a server using current mobile equipment, such as Tablet PCs or Pocket PCs, whereby the display is automatically adapted to match the capabilities of the respective client.

A visualization agent collects and analyzes all available data about the client, and makes it available to the server. Visualizations are then generated dynamically, with particular adjustment of the layout to match the capabilities of the respective mobile client. The descriptive language is interchangeable. Several transmission techniques were investigated within the scope of this project, especially WLAN and Bluetooth. In principle however, because of the flexible approach employed, there are no restrictions as to transmission technology so even UMTS may be employed.

A good example of how this research has been implemented is an information system for the operation of sewage treatment facilities. In SIMILAR, specialists have a flexible system that prepares general information about the plant and the aggregate, the current activity data and measurements, maintenance and repair instructions, emergency actions and training documents. In addition to texts and image data, the user may call up videos, 3D graphic displays, and technical plans. The project is part of the special research area "Intelligent Visualization and Simulation" lead by Prof. Dr. Hans Hagen and was implemented in collaboration with the department of Environmental Engineering at the University of Kaiserslautern.
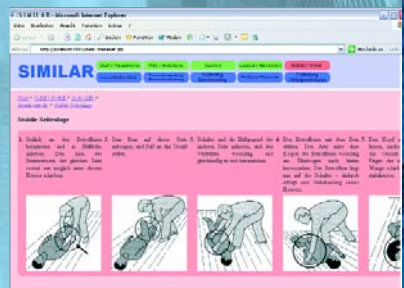
Additional information is available at: www.dfki.de/ivs
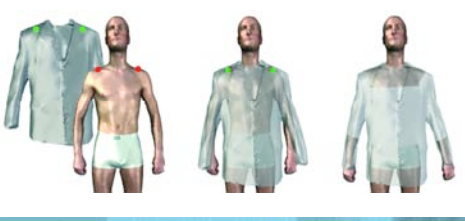
Services offered by DFKI:
Scalable mobile information visualization, visualization agents, Client-Server solutions, integration of mobile transmission technologies

Contact:
Achim Ebert
E-Mail: Achim.Ebert@dfki.de
Tel.: +49 (0)631 205-3502
Fax: +49 (0)631 205-3210

Virtual Try-On

The Virtual Try-On project, funded by the Federal Ministry of Education and Research (BMBF), develops real time simulations and realistic 3-dimensional visualizations of custom clothing on virtual customers based on innovative Virtual Reality (VR) technologies.

The Virtual Try-On project blends the familiarity of custom clothing from traditional shops with the convenient options made possible by e-commerce in the form of virtual shopping. This timely project benefits from the growing demand for custom made clothing in the clothing industry. Building on the recent advances in research in the field of simulation in garment design, as well as current progress in non-contact, 3D body measuring technologies, new methods and techniques have lead to the development of prototypes that enable the virtual selection, trying on and decision making by the customer about an article of custom made clothing. A seamless process chain, from the virtualization of the customer - made possible by 3D laser scanners to determine and automatically record the body measurements - all the way through to the final, photorealistic, 3D representation of the virtual customer wearing the desired articles of clothing has been achieved.

Virtual Try-On can be seen as part of the future parc exhibit of the BMBF at CeBIT 2004 (Hall 11, Stand D 32). The consortium manager, HUMAN SOLUTIONS GmbH will present regular live demonstrations.

Additional information is available at:
www.dfki.de/ivs
www.virtualtryon.de

Services offered by DFKI:
Combination of innovative collections of custom clothing with e-commerce employing VR methods; implementation by virtual, individual online catalogs; development of intelligent morphing methods for the visualization of clothing.

Contact:
Achim Ebert
E-Mail: Achim.Ebert@dfki.de
Tel.: +49 (0)631 205-3502
Fax: +49 (0)631 205-3210

Prof. Wahlster welcomed into the Nobel Prize Academy

Prof. Dr. Dr. h. c. mult. Wolfgang Wahlster became an official member of the Royal Swedish Academy of Sciences during a ceremony in February 2004 in Stockholm, Sweden. Following the induction ceremony, he addressed the plenary session of the Academy on the topic, "Understanding Multimodal Man-Machine Dialog", in which he discussed the results of the BMBF funded project, SmartKom, which established Germany as a world leader in the field of Human Computer Interaction.

The Academy was founded in 1739 and today is responsible for the selection of Nobel prize winners in ten categories or classes. Prof. Wahlster is the only German scientist to be a member of the Engineering Sciences class. According to the charter of the Royal Swedish Academy, each class may have a maximum of ten foreign and ten Swedish members and membership is for life.

Membership in the Royal Swedish Academy of Science is important because all members – nominating as well as voting – are involved in the annual selection of Nobel prize winners in Physics, Chemistry and Economics, a grant donated by the Bank of Sweden in memory of Alfred Nobel. Every year in October, the selection committee makes its recommendations from among the nominated candidates to the voting members of the Academy who then cast the deciding votes. Strict secrecy accompanies each step of the selection process.

Prof. Wahlster has many ties to Sweden: In 1998, he became the first German scientist to receive an honorary doctor title from the University of Linköping. As the Chair of the Computer Science department at the University of Saarland, he has mentored many masters and doctoral candidates who are natives of Sweden. Since 2001, he has been a member of the science advisory committee to the Swedish Research Institute for Information Technology (SITI), the largest information systems research association in Sweden. Since 2003, he has also been the senior scientific editor of "Electronic Transactions on Artificial Intelligence (ETAI)", an international technical journal for Artificial Intelligence published by the Royal Swedish Academy of Science.

The German Minister of Education and Research (BMBF), Edelgard Bulmahn, congratulated Prof. Wahlster in a personal letter in which she stated, "In appreciation and recognition of your accomplishments in the field of research in the areas of artificial intelligence and knowledge management and for focusing worldwide attention on the research excellence of the Saarbruecken region in the area of speech processing and Human Computer Interaction," she continued, "Please accept my special gratitude for your significant contributions in helping the Ministry of Education and Research to promote

Germany in the world as a center for leading edge research in your areas of expertise and for increasing the opportunities for international cooperation."

Next to this prestigious award of membership in the Nobel Academy, Prof. Wahlster's other awards include the Beckurts Prize in 2000 and the Federal President's German Future Prize in 2001.

Wolfgang Wahlster, Gunnar Öquist (President), Jan Lindsten (Secretary General)

Opening of New Competence Center – "Virtual office of the future"

Japanese IT giant chooses Kaiserslautern as the site for its European research

The meeting has just started. Suddenly, you realise you have left an important document back at your office: an embarrassing moment of silence ensues. The "virtual office of the future" promises to help in such situations. As of December 2003, a new Competence Center was established together with the Fraunhofer Institute for Experimental Software Engineering (IESE) at the DFKI-Kaiserslautern location.

The purpose is to develop innovative and intelligent office applications in collaboration with commercial companies. Products, essential information, documents and data regardless of storage location will be available in compact and reliable format. The joint venture presents excellent prospects for success. The DFKI facilities in Saarbruecken and Kaiserslautern and the Fraunhofer IESE offer research expertise in the fields of document management, data processing and software engineering that is without parallel in the world. The project is also supported by the State of Rheinland Palatinate which is providing funding in the amount of € 850,000 through the end of 2005.

Dr. Hideko Kunii, Senior Vice President and Head of Research at RICOH

The first application partner has already been found. The Competence Center is pleased to be collaborating with the Japanese IT giant RICOH to create the "virtual office of the future". With 75,000 employees and a turnover of approximately 15 billion US dollars, the Japanese company is one of the leading suppliers of office communication systems worldwide. RICOH decided to cooperate with DFKI and the Fraunhofer IESE in the development of innovative solutions for the office of the future. Small to medium sized enterprises in the region may also be asked to contribute on the basis of their complementary know-how.

At the opening ceremonies, Prof. Helmut Schmidt, President of the Technical University of Kaiserslautern welcomed the State Science and Technology Minister, Jürgen Zöllner, the State Secretary for Economics, Harald Glahn, the Consul General of Japan, Masaki Okada and Dr. Hideko Kunii, Senior Vice President and Head of Research for RICOH. Zöllner and Glahn expressed their hope that RICOH would soon consider the establishment of a permanent research laboratory in Kaiserslautern. According to Hideko Kunii, Kaiserslautern is the site that offers the highest competencies in the research areas of most significance to the future of RICOH – namely, software engineering and document management. Moreover, the city of Kaiserslautern represents – with its longstanding partnership with Bunkyo-ku, which is also the headquarters location of RICOH's Software R&D Group, and its highly regarded Technical University – the ideal conditions for productive collaboration.

Prof. Andreas Dengel, scientific director and spokesperson for DFKI-Kaiserslautern expressed delight with the RICOH decision in favor of Kaiserslautern. „A successful collaboration now may result in a long term RICOH presence in Kaiserslautern," said Prof. Dengel.

Project groups will consist of three RICOH employees and three scientists from the Kaiserslautern research facilities. The first representatives from RICOH arrived in Kaiserslautern last November 2003.

Contact:
Prof. Dr. Andreas Dengel
E-Mail: Andreas.Dengel@dfki.de
Tel.: +49 (0)631 205-3215
Fax: +49 (0)631 205-3210

Indo-German Cooperation in Speech Technology

As a consequence of the presentation of Verbmobil in New Delhi, on March 4, 2003 and the subsequent visit to the DFKI in September 2003 by Prof. V.S. Ramamurthy, Indian Minister for Research, an expert-workshop with approximately 40 participants was conducted in Chennai, India on February 17-18, 2004.

The purpose of the workshop was to generate ideas for potential applications that may be of sufficient mutual interest to enter into a cooperative research effort. As a result of the two day conference, several feasibility studies are to be conducted that could lead to a joint implementation project for a multilingual, telephone dialog system (MIA). The Germans have already presented one possible system architecture. MIA should facilitate multilingual access to official Indian government information which is currently available only in the English language.

MIA uses the telephone as the means of input and output. Speech recognition must be independent of speaker and must support at least 5 input languages (Hindhi, Tamil etc.), as noted by the Indian delegation. Hindi and Tamil languages are spoken by over 300 million and 80 million Indian citizens respectively.

The official opening on February 17, demonstrated the high degree of interest in this cooperation on the part of India. In addition to Prof. C N Krishnan, AU-KBC Research Centre, other participants included Prof. Dr. E Balagurusamy, Vice-Chancellor, Anna University, Dr. G Padmanabham, DST, Govt. of India, Mr. N. Kumar, Vice Chairman, Sanmar Group, Chairman, Confederation of Indian Industry (CII Logistics Committee).

The delegation from Germany included seven experts in the field of speech technology. The group, organized under the leadership of Reinhard Karger, DFKI, included Stephan Busemann, DFKI, Stephan Kanthak, Aixplain, Andreas Klüter, Sonicson, Norbert Reithinger, DFKI, Steffen Staab, AIFB and Gerd Unruh, Fh Furtwangen. Travel expenses were funded by the international office of the BMBF.

Spin-off Products from SmartKom Project

photo: Roland Mader, DLR

Wolfgang Wahlster, Christoph Matschie (Parliamentary State Secretary at BMBF)

At the Conference on Virtual and Extended Reality held in Leipzig, February 19-20, 2004, MediaInterface Dresden GmbH introduced its SpeaKING® product. A speech controlled component, SpeaKING® was integrated into a security camera. At the spoken command, the camera is able to create a "trade fair badge" by snapping a photo of the subject and immediately printing it to the pass. A digital dictation system makes it possible to store spoken comments together with the picture. Advanced technology permits the system to "see through" background noise typically present at trade fairs. The ablity to overcome the background noise produced by operating equipment, power units, conveyor belts, or the babble of many voices, will open up new application scenarios for industrial environments.

This capability is made possible by directional microphones, noise suppression algorithms, and new methods that have been developed in the area of speech recognition. Also, being "speaker-independent", the camera is continously ready for immediate use – eliminating the requirement for any time consuming, user recognition training. The "keyword spotting" thesaurus automatically sorts the speech commands from the extraneous flow of speech: no additional activation keys are required.

The SpeaKING® product group is based on the results of the BMBF pilot project called SmartKom. The involvement of MediaInterface Dresden GmbH – a technological partner of Siemens AG – in this project was extremely beneficial as it was able to integrate SmartKom's speech processing algorithms with its own innovative speech processing solutions into the SpeaKING® product.

SpeaKING® will be shown at the special Human Computer Interaction exhibit at the CeBIT 2004 future parc. (Hall 11, stand E 28).

Additional information is available at:
www.smartkom.org
www.mediainterface.de

DFKI-Contact:
Dr. Anselm Blocher
E-Mail: Anselm.Blocher@dfki.de
Tel.: +49 (0)681 302-5262
Fax: +49 (0)681 302-5341

Contact:
MediaInterface Dresden
Dipl.-Ing. Bernd Schindler
E-Mail: schindler@mediainterface.de
Tel.: +49 (0)351 56369-0
Fax.:+49 (0)351 56369-19

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DFKI – Simply Innovation

The German Research Center for Artificial Intelligence (DFKI GmbH), with facilities in Kaiserslautern and Saarbruecken, is the country's leading research center in the area of innovative software technology for commercial application. In the international scientific community, DFKI is recognized as one of the most important "Centers of Excellence" in the world for its proven ability to rapidly bring leading edge research to commercially relevant application solutions.

DFKI was founded in 1988 as a nonprofit organization by several renowned German IT companies and the merger of two large, research facilities. Since then, DFKI GmbH has established a reputation for proactive and customer oriented work and is known both nationally and internationally as a competent and reliable partner for commercial innovation.

Because of the increasingly short cycles of innovation in the field of information technology, the lines between research, application related development, and conversion to products are becoming blurred. This is why DFKI projects typically include the entire spectrum from basic application-based research to market and customer oriented development of product functions.
DFKI GmbH is managed by Prof. Dr. Dr. h.c. mult. Wolfgang Wahlster (Chairman and CEO) and Dr. Walter G. Olthoff (Commercial Director).

The projects at the DFKI are organized under one of the following six areas of research:
• Image understanding and pattern recognition (Director: Prof. Dr. Thomas Breuel)
• Knowledge management (Director: Prof. Dr. Andreas Dengel)
• Intelligent visualization and simulation systems (Director: Prof. Dr. Hans Hagen)
• Deduction and multi-agent systems (Director: Prof. Dr. Jörg Siekmann)
• Language technologies (Director: Prof. Dr. Hans Uszkoreit)
• Intelligent user interfaces (Director: Prof. Dr. Wolfgang Wahlster)
Since early 2002, the Institute for Information Systems (IWi) (Director: Prof. Dr. Dr. h.c. mult. August-Wilhelm Scheer) has also been integrated with DFKI.

The purpose of the transfer centers listed below is to make the scientific results of DFKI research available to commercial applications:
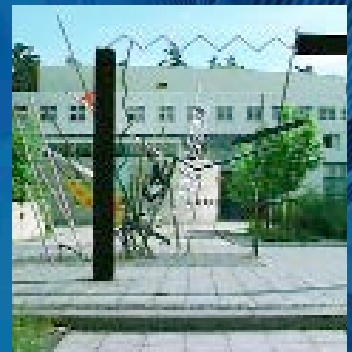• SISO – The path to software security
• AICommerce – Intelligence in e-business

At the DFKI competence centers, there is a broad concentration of technological and technical know-how and the purpose is the management of important scientific problems from the following subject areas:
• E-Learning
• Language technologies
• Semantic web

Currently, the DFKI GmbH employs 173 highly skilled people. They are supported on a part time basis by an additional 145 student research assistants. In fiscal year 2003, despite the prevailing troubled economic conditions, the research institute managed an overall budget of almost €15 million and achieved a positive net income for another consecutive year. The list of corporate partners in the DFKI includes DaimlerChrysler, SAP, IDS Scheer and Dresdner Bank, which is an indication of how much the performance achieved by DFKI is valued by industry.

All work is organized under projects that have a clear objective and are scheduled to last for a specific period of time. This leads, among other things, to patented solutions, prototypes, or new or improved product functions. At the present time, there are 59 ongoing projects. Project progress is checked once a year by an independent, international group of respected experts. In addition to the BMBF grants for large, joint research projects like "VERISOFT – Verification as engineering discipline" substantial contracts from business enterprises could also be acquired in the year 2003. The successful transfer of DFKI research results to functional products is continuing. The DFKI model of public-private-partnership was positively received at numerous presentations and is often referenced as the recommended structure. The next goal is to win the acceptance of this organizational form into the federal funding handbook. In December 2003, DFKI acquired a legal interest in the newly founded Center for the Evaluation of Languages and Technologies (CELCT) in Trento. The company also holds shares in XtraMind Technologies GmbH. The general aim of expanding the research and development activities is realistic and remains valid for 2004.