



High-Tech for cancer treatment

Researchers from the Fraunhofer Institute for Computer Graphics IGD are among the winners of the »innovation competition for the promotion of medical technology«. Along with eleven other prize-winners, they were honored by the Ministry of Education and Research on the occasion of the MEDICA congress on November, 24th, 2000. An international jury honored their innovative research method jointly followed by researchers of the Institute and the Dr.-Horst-Schmidt hospital in Wiesbaden, Germany. They are planning to »upgrade« the established white light endoscopy by a new image processing software to allow a novel analysis and information processing of the endoscopic picture. If successful, diagnosis and therapy of bladder cancer could be improved considerably. Within less than two years, a prototype will deliver revealing tumor pictures for doctors. If this so-called key experiment succeeds, the Karl Storz company is very interested to become an industrial partner and marketing the results.

In Germany, about 16,000 people are affected by bladder cancer. Although today's high-resolution endoscopes allow a detailed view on the mucous tissue of the bladder and tumors can be operated very precisely, there is a relapse rate of between 50 and 70 percent. In half the cases, it is caused by the primary tumor that was not detected and removed fully by surgeons. »Assisted by electronical processing we hope to cover the primary tumor fully and will also aim to make small tumor fringes and initial stages of the tumor visible on the endoscopic picture,« says Wolfgang Müller-Wittich, Fraunhofer IGD, about the objectives of the research project. The

interdisciplinary expert team from the Fraunhofer IGD and the Dr.-Horst-Schmidt hospital uses several optical characteristics which differ from the healthy tissue of the mucous membranes of the bladder. These and other characteristics cannot be detected with the naked eye. However, with innovative computer software, it will soon be possible to combine important additional information, decode it and make it visible on the endoscope screen. Assisted by this technology, the tumor can be detected and marked during an operation and will be shown to the urologist on the endoscopic picture. Helped by thus improved endoscopic possibilities, doctors could remove the bladder carcinoma completely and moreover detect the small satellite tumors, tumor fringes and initial stages of tumors responsible for most relapses. This new method does not have any impact on endoscopic and operation techniques which means that the patient will not be additionally stressed.

The innovation competition

An international jury of experts has chosen 12 winners out of 88 applicants for the »innovation competition for the promotion of medical technology«. This year, funds for the winners from the Ministry of Education and Research amount to 4.4 million Marks total. The researchers can thus use the money which would be 300,000 to 500,000 Marks per winning party, to test their ideas in the described key experiment and implement them in a short time.

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»apogeo« – Portraits and Illustrations

Feh Reichl exhibited photographic illustrations in the Fraunhofer IGD building

Women and the way they see themselves – their strength and beauty, passion and erotics, provocations and fears. This theme was explored by the artist Feh Reichl in her photo series »apogeo«. The expressive portrait shots are presented in the foyer of the Fraunhofer Institute for Computer Graphics in Darmstadt, Germany. From February, 9th to March, 13th, the graduate designer showed her work, photographic illustrations of poems by Gioconda Belli, the Nicaraguanien Booker Prize winner. »My photo series apogio illustrates Bellis' poems from the volume 'Feuerwerk in meinem Hafen' by showing the individual personality of women while linking it to the special atmosphere of the moment«, says Feh Reichl. To express the characteristics of the different women and thus trying to grasp their personality, the 36 year-old uses different techniques. In addition to colored and black and white material, she also works with prints with a high silver content and experiments with nitro and palladium prints to generate the desired effects. The book related to the photoseries »apogeo« is also presented at the exhibition. Photography, typography and handwritten statements of the portrayed women make it a multi-faceted piece of art. The photographs are also an homage to Gioconda Belli who has inspired Feh Reichl with her direct and expressive language. In Bellis' work, »apogeo« is translated as »zenith«. Trespassing life's noon, this turning-point should be seen as an important time to stand still, look back and review incidents to maybe give the future »spiral back« of life a new rhythm or a new orientation. The very private perspective of the artist makes the photo series a fascinating experience of captured moments beyond the surface.

For further information please visit:
<http://www.inigraphics.net/house-art/>

»apogeo« is Latin and signifies the most distant point of a planet's or satellite's orbit from the earth. On Your Way with Digital Assistants

CAST-Förderpreis IT-Sicherheit 2001

Das Competence Center for Applied Security Technology (CAST-Forum) hat sich zum Ziel gesetzt, dem wachsenden Stellenwert der IT-Sicherheit in allen Wirtschaftszweigen und Bereichen der öffentlichen Verwaltung die erforderliche Kompetenz gegenüberzustellen und weiterzuentwickeln. Zu den Aufgaben des Forums gehört die Förderung von innovativen Sicherheitslösungen mit Wirkung für den europäischen Wirtschaftsraum, sowie die Aus- und Weiterbildung zur IT-Sicherheit für alle Berufs- und Tätigkeitsbereiche. In diesem Zusammenhang nimmt die Förderung der Ausbildung einen besonderen Stellenwert ein.

Die Mitglieder des CAST Forum möchten mit dem hiermit ausgeschriebenem CAST-Förderpreis Innovationen fördern und herausragende Arbeiten aus dem Bereich IT-Security auszeichnen. Der Förderpreis wird erstmals im Jahre 2001 vergeben. Teilnahmeberechtigt sind Studenten und Auszubildende aller deutschen Hochschulen und betrieblichen Ausbildungsstätten. Gefragt sind preiswürdige Studien- und Diplomarbeiten bzw. Abschlussarbeiten von Auszubildenden, die im Zeitraum Januar 2000 bis August 2001 abgeschlossen wurden. Die Arbeiten sollen innovative Ideen, Konzepte und Implementierungen aus dem Bereich der IT-Sicherheit beinhalten. Die Einsendungen von Arbeiten wird unter Berücksichtigung der folgenden formalen Ausschreibungskriterien erbeten (der Rechtsweg ist ausgeschlossen).

Einsendeschluss: 31. August 2001, 12.00h

Einsendungen an:

CAST-Forum
z.Hd. Dr. Christoph Busch,
Rundeturmstr. 6
64283 Darmstadt, Germany
Email: busch@igd.fhg.de

Preisgelder:

1. Platz: 15.000,- DM
2. Platz: 10.000,- DM
3. Platz: 5.000,- DM
4. - 10. Platz: kostenfreie Teilnahme an allen CAST-Workshops im Jahr 2002

Format der Einsendung: Die Arbeiten in deutscher Sprache sind elektronisch in einem der folgenden Dateiformate einzureichen: MS-Word für Windows 97/2000, PDF, RTF, Postscript. Die Autorenschaft des Einsenders wird durch die Bestätigung des vorschlagenden Betreuers der Arbeit nachgewiesen. Die Bestätigung erfolgt mit Vorschlagsformular, das parallel zur elektronischen Einreichung auf dem Postweg an die obige Adresse gesandt wird.

Vorschlagsberechtigt: Die Vorschläge zum Förderpreis sind vom Betreuer einer Studien- oder Diplomarbeit für studentische Arbeiten bzw. vom Ausbildungsleiter, Berufsschullehrer oder einem Mitglied der IHK Prüfungskommission für praktische Abschlußarbeiten aus den IT-Fachinformatiker Ausbildungen einzureichen.

Auswahlverfahren: Aus den 300 ersten Einsendungen wird das von den CAST-Mitgliedern bestellte Preiskomitee die zehn besten Arbeiten in die engere Wahl ziehen. Die ausgewählten Autoren werden zur Präsentation ihrer Arbeiten (20 Minuten Vortrag und 10 Minuten Diskussion) auf der Mitgliederversammlung am 22. November 2001 eingeladen. Die Reisekosten werden bis zu einer Höhe von DM 150,- übernommen. Übernachtung und Rahmenprogramm am Vorabend der Veranstaltung richtet das CAST-Forum aus. Die Vergabe der ausgeschriebenem Preise wird – vorbehaltlich der ausreichenden Qualität der Einsendungen – durch

geheime Wahl der anwesenden Mitglieder entschieden. Der Rechtsweg ist ausgeschlossen.

Bekanntgabe: Die Preisträger und ausgewählten Arbeiten werden am 22. November 2001 auf dem CAST-Server (www.castforum.de) publiziert.

Information: Aktuelle Informationen zum CAST-Förderpreis finden sich unter:
<http://www.castforum.de/foerderpreis/foerderpreis2001.html>

Empowered Learning via the Net Fraunhofer IGD presents new systems at the CeBIT 2001

Knowledge and information are frequently responsible for the economic success of companies and job perspectives of employees. Many people must therefore be prepared to continuously train their abilities. »Lifelong learning« has already become the key word of our times, since knowledge is outdated more and more rapidly. »Just-in-time qualification« is needed – meaning that the individual should be able to retrieve information anytime and use it effectively and appropriately within a particular time frame. The use of multimedia applications or online-learning systems seems ideal for this purpose since the learner can train his or her abilities at work or at home.

At this year's CeBIT (22.03. - 28.03.; Hall 16, booth B23/2), researchers of the Rostock Fraunhofer Institute for Computer Graphics IGD will show innovative applications in this field. The IT-based learning tool »Course Management System for the World Wide Web«, or CMS-W3 for short, supports learners in their studies and training and assists experts when designing the relevant learning content. Moreover, tutors are supported during the training process. Different scenarios show CeBIT visitors how to perform the needed training via the Web. If the user plans to learn how to design a website, for example, he or she can navigate through the different course modules step by step. Despite complex features, the multimedia user interface is easy to use.

»Already, the course attendant has the possibilities to control speed and difficulty level of training content while the system accounts for content and didactic rules when navigating through

the learning content. In the future, it will be able to adapt flexibly to the individual level of knowledge of the individual course attendant,« states Prof. Bodo Urban, Director of the Fraunhofer IGD in Rostock. Another benefit of the system is that communication solutions like netmeetings or Web phone can be integrated into the cooperative learning environment. Thus, the learner can contact other learners as well as tutors or experts at any time. CMS-W3 has already been successfully used in the remote learning area, in University studies and in the field of training.

Eye contact

Many websites almost insult the visitor's eye and make him leave it immediately. They are designed confusingly and contain irrelevant or incomprehensible text and image information. Navigation is often complicated or ends in an error message. According to Jörg Voskamp, leader of the department Visualization and Interaction Techniques at the Rostock IGD, »we need new concepts focusing on the user and his natural communication when developing user interfaces.« His research team works on improving performance and acceptance of new, complex systems. At the CeBIT, they will present an extraordinary installation called »RealEYES«. It examines the computer user's eye movements. Depending on where the user looks on the screen will indicate which expectations and problems he has with using the application. The results of this »usability test« indicate quality and design of a specific software. An analysis of the system may be used by web and software developers to help them design their Internet pages and programs in a more interestingly and user-friendly way. RealEYES links the quality evaluation of modern software with the analysis of intuitive interaction techniques between man and machine.

Learning by playing computer games

High-quality computer games are marked by successful dramaturgy. The player is told an absorbing story and led through the application. To translate this playful user prompting for conventional application was the task to be solved by researchers of the department Entertainment Technologies at the IGD in Rostock. »If we succeed to transfer methods and metaphors from games into the job world of everyday life, complex programs will be easier comprehended and work with them will be more convenient,« says department leader Holger Diener. Does the player identify with the story's characters? What interaction possibilities are there? Starting from these questions, criteria are derived to dissolve traditional menu structures of text processing, spreadsheets or CAD applications. The research team is dedicated to this task working on the project »Gamebased Interfaces«. In the future, the user will be supported professionally by so-called avatars similar to digital game characters when working with catalog applications or large databases. A virtual assistant uses intelligent query methods and delivers the desired information quickly and clearly. This intuitive usage will open up new possibilities in the field of man-machine interaction.

For detailed information on the described systems, please visit:

http://www.rostock.igd.fhg.de/fhg_igd/abteilungen/a1/prototypen/cms-w3_e.html
http://www.rostock.igd.fhg.de/fhg_igd/abteilungen/a2/projekte/RealEYES_e.html
http://www.rostock.igd.fhg.de/fhg_igd/abteilungen/a4_e.html

CeBIT Hannover 2001
 Common booth of Fraunhofer Society
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Secure Computer Networks

Spectacular hacker attacks directed at organizations like Microsoft, research laboratories or the Pentagon make the headlines again and again. However, not only these attacks involving viruses or Trojan horses from the Internet are dangerous but also internal staff members may cause damage by using non-licensed software, by infiltrating viruses, misusing network access rights or stealing information or complete storage modules. Therefore we need overall security concepts preventing the misuse of sensitive information and the violation of copyrights – internally and externally.

Flexible access and use control in a high-security environment is offered by the so-called »ReEncryption™ System«, known under the project name »CIPRESS«. This security system will be presented by Fraunhofer Institute for Computer Graphics (IGD) at the CeBIT computer fair (hall 16, booth B23/2). »CIPRESS« (Cryptographic Intellectual Property Rights Enforcement SyStem) has been developed by IGD researchers on behalf of Mitsubishi Corporation, Tokyo. The system enforces mandatory encryption at all times while presenting a normal view of operations to users. Furthermore, security administrators can trace and control the use of data. Even illegal analog copies of digital data can be identified and the perpetrator can be prosecuted. Even theft of complete storage devices or computers does not endanger the security of sensitive data contained therein. This high security level is achieved by combining two advanced technologies: The ReEncryption™ method patented by Mitsubishi Corporation and the Digital Watermarks patented by Fraunhofer-IGD are directly embedded into the operating system and can therefore provide overall security for all applications available on the operating system. The current version of the system is supporting Microsoft® Windows® NT 4.0. Versions for Microsoft® Win-

dows® 2000 as well as for leading Unix® variants like Sun® Solaris® are under development.

CIPRESS provides maximum security. This has been proven during an extensive field trial. Data is encrypted at all times. A Key Center as the central component generates and stores cryptographic keys and traces and controls the use of data and documents.

Detailed information about the »ReEncryption™ System«/»CIPRESS« can be obtained under the URL: <http://www.igd.fhg.de/igd-a8/projects/cipress/index.html>

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On Your Way with Digital Assistants

Fraunhofer IGD shows mobile multimedia services for job and leisure at the CeBIT

The future belongs to mobile communication. In some European countries, there are already more mobile phones than households. Experts predict that 530 million people will use mobile radio telephone services world-wide by the end of 2001 – and not exclusively for phoning. An increasing number of users will be informed about sales offers in local storehouses, book a table in a nearby restaurant, buy a movie ticket or query local traffic jams via mobile phone or mobile handhelds. Together with these personalized, location-based services, stocks and shares trading and entertainment are seen as key application fields for the UMTS nets.

Innovative applications and services of the Rostock Fraunhofer Institute for Computer Graphics show that the new mobile world has already begun. IGD researcher present at CeBIT 2001 (hall 16, booth B23/2) wearable, individual information and navigation systems, shopping

assistants and inventory systems for mobile end devices as well as a wearable »friend« called Telebuddy, as a medium for the Web dialog (hall 16, booth D45).

Assisted by the mobile information system »eGuide«, owners of palm-handhelds or comparable mobile computers can easily find their way through the bustle of the fair. The personal digital assistant informs the visitor about exhibitors and products in detail. Moreover, it presents hall maps and different stand locations. The visitor can plan his or her individual tour through the fair and enter notes about single exhibitors. For the CeBIT fair, IGD researcher have filled their »eGuide« system with data and picture information on scientific exhibits and products of the Fraunhofer stand. Also, the digital guide will provide visitors with an overview as well as with detailed information on current events and lectures taking place in the context of a fair or conference. The desired lecture hall will be found by a miniaturized infrared sender. All IrDA-Beacon® transmitter developed by IGD in Rostock, lead the visitor to the desired place of interest. »eGuide« has already been used on numerous fairs and conferences such as CeBIT 2000, EXPO 2000 or Systems 2000 and has proved its use in major museums. It is based on the XyberScout concept which provides a standard platform for personal mobile information systems. Project leader Dr. Thomas Kirste is convinced that »in the future, an increasing number of services will be provided over a standard compact and mobile device, since it will then be possible to capture data on-site for the user. He could access stationary information services or retrieve information from the Web.«

In many cases, it has proved efficient to register objects on-site, as in the case of an inventory-taking. The system »MOIN« (Mobile Inventarisierung or Mobile Inventory-taking) enables the direct registration of objects, as for example with barcode-scanners.

Specifically integrated communication software allows the alignment of current stock data with the centrally managed building or inventory databases at any time. The time-consuming manual editing of lists and charts can be spared when using »MOIN«. The employees do not need to review the inventory repeatedly if mismatches appear. The inventory-taking is calculated automatically and can be continually updated when using electronic location maps. The researchers from Rostock are developing further concepts which are also based on »MOIN«. For example, they work in the field of facility management to optimize work processes within a building or building site. »Not only when working, but also in everyday life, the computer will play an increasingly supporting role in the future,« predicts Kirste, leader of the department Mobile Multimedia Technologies at the IGD Rostock. As for example when shopping, the customer is often not able to gather or filter all the product and pricing information when equipped merely with a pencil and a piece of paper. With the »eShop« system however, researchers from Rostock developed a mobile shopping assistant which processes e.g. shopping lists electronically for its user. In the future, a customer connected with the storehouse server will be presented with current product information and sales offers via miniature display. He will be able to find the desired products easily and in particular be able to compare prices immediately with the stored data of another storehouse which can help the user to save money. »eShop« was developed in the context of the »e-sist« project led by the Fraunhofer Alliance Microelectronics V μ E for the promotion of the development of mobile, electronic products.

Mobile, cutting-edge technology combined with interactive, communicative video technologies – a task that was realized by IGD and ZGDV researcher resulting in »Telebuddy«, a mini computer in

the form of a puppet. It will allow CeBIT visitors to use new enjoyable and fascinating forms of Web-based dialogs. The mobile »buddy« accompanies its users through fair halls. The Internet user can »slip into« the skin of the sympathetic avatar puppet to watch with its eyes, listen with its ears and speak with its voice. They can experience the scene live and interact from anywhere. The puppet expresses all questions or suggestions of the virtual audience. Telebuddy already fascinated EXPO 2000 visitors in Hanover. For detailed information on the described systems, please visit:

http://www.rostock.igd.fhg.de/fhg_igd/abteilungen/a3/projects/

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PPP – Funding Programs for the Exchange of Researchers and Diploma Students within Predefined Projects

INI-GraphicsNet is obliged to a long tradition of exchanging researchers and students; visitors in research and academia from all over the world have been hosted in INI-GraphicsNet institutes, which are adjoined to local universities and participate in university research, teaching and life. The Portuguese Centro de Computação Gráfica (CCG) is related to the University of Coimbra; Singapore to the Nanyang University of Technology; the US to RISD and Brown University; and the German institutes are adjoined to the University of Rostock and the Darmstadt University of Technology.

In the 04/2000 issue of topics, funding options for research and study by scholarships on an individual personalized basis have been presented. The focus of this 05/2000 issue of topics is on project related funding programs, which are offered by a variety of independent funding bodies such as e.g. the German academic exchange service (DAAD).

The DAAD offers sixteen different programs for the exchange of persons in predefined projects (PPP). Each of these programs is available for a special exchange country and, typically, a German project partner. The sixteen different participating countries include Portugal, which offers the *Acções Integradas Luso-Alemãs* program, where the next application deadline is in early 2001. The *Acções Integradas Luso-Alemãs* is operated by the DAAD, the Portuguese Conference of Rectors (Conselho de Reitores Universidades Portuguesas – CRUP), and the Instituto de Cooperação Científica e Tecnológica Internacional (ICCTI).

The funding for this program is provided by the German ministry for education and research (BMBF) and covers the funding for annual research visits up to an amount of 5000 Euro per project per year. Applicants are expected to conform to the following criteria: the project must be dedicated to benefit junior researchers and students; both involved partner institutes should draw a complementary benefit of the program; and the project must be likely to receive further funding by EU scholarship programs or other national funding opportunities. The total duration of one project should not exceed two years.

Apart from the German – Portuguese exchange, the DAAD offers similar PPP funding for currently fifteen other countries. These countries include the European and Scandinavian EU member states: Finland, France, Great Britain, Italy, Portugal, Sweden, Spain and the non EU-member states Hungary and Poland. Moreover, PPP is open to Latin American countries including Argentina, Brasilia and Chile. Other overseas non EU-member states, which are eligible for participation in a joint exchange project, are Hong Kong, India, Taiwan and the United States.

Application deadlines are set on one fixed date per year, which is typically in early spring but differs for the individual programs. For the current year the PPP application deadlines are still open for Argentina (presumably October 1, 2000), Chile (presumably October 1, 2000), Great Britain (December 31, 2000), India (September 30, 2000) and Italy (September 30, 2000). The next application round for the other participating countries starts in early 2001. The presumable start of the call for proposals in the Portuguese – German *Acções Integradas Luso-Alemãs* program is to be expected for February 2001, the application deadline presumably in May 2001.

In the past, a variety of PPP joint projects were incited and successfully completed by the initia-

tive of INI-GraphicsNet researchers.

Qualified students and researchers of eligible countries are invited to contact INI-GraphicsNet institutes in the suitable countries, e.g. Portugal or Germany, for the definition of joint projects where a thematic background applies and a common complementary interest is provided.

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ALUMNI

Addressing former staff members of INI-GraphicsNet:

The INI-Graphics-Alumni Forum

is a meeting-place and pool for former staff members of the INI-GraphicsNet. If you wish to become a fellow member please contact:

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