The (IM)2 Newsletter
The first year of (IM)2 in review. Visit of Prof. N. Morgan. IDIAP analysis of bin Laden tape.

The Peripheral Systems Lab at EPFL, lead by Prof. Roger D. Hersch, is active in color imaging and media servers.

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INTERACTIVE MULTIMODAL INFORMATION MANAGEMENT

The (IM)2 Newsletter

Every month the (IM)2 Newsletter brings you the latest and hottest scientific and administrative news about the (IM)2 NCCR and related topics

(IM)2's first year in review

(IM)2's first year of activity is almost over. While much time was dedicated to the setting up of the structure, procedures, and teams, great research results have already been achieved. Hiring, especially of PhD students, has allowed most (IM)2 positions to be filled and has thus strengthened the teams working in the scope of (IM)2 in Switzerland.

While mostly autonomous, the NCCRs are supervised by the SNSF. This supervision takes the form of an annual progress report and a site visit from the Review Panel appointed by the SNSF. The Review Panel submits a confidential report to the SNSF, but SNSF provides feedback to the NCCR management based, in part, on this report.

The feedback for the first year of (IM)2 is highly positive. We reproduce here some excerpts:

- *The Review Panel has a very positive impression of what the NCCR has achieved in a relatively short time. The (IM)2 team is working in a hot field, holding its own against comparable international efforts. The Panel appreciated the positioning and comparison of (IM)2 with respect to peer projects as given in the oral presentation. Some of the work within (IM)2 is really on the bleeding edge.*
- *There are already clearly visible synergies especially between speech and vision aspects of the project. The common vision of the programme will need further development. The individual projects are well chosen and serve as a useful basis for this development.*
- *The NCCR has already a good reputation and has attracted some top notch professionals and students.*

The full text received by the NCCR can be seen on the private (IM)2 web site.

Regarding knowledge and technology transfer, the Review Panel thinks that the approach through CIMTEC chosen by the NCCR management is commendable. As of late 2002, the process has been bootstraped with IDIAP's activities, it will now be extended to other partners during the first half of next year.

Education and training have received less consideration so far. More efforts will be deployed in this area in 2003. The first goal is to establish a list of all courses tought within the (IM)2 network and to open those courses to all interested parties.

SNSF acknowledges the fact that a large share of the NCCR activity comes from the Leading House, IDIAP, and expects this proportion to decrease in coming years when the partner institutions catch-up. In this regard, special care will be taken for the integration of results and the cooperation of various teams on related topics.

Next year's site visit will concentrate on:

- progress and integration of the NCCR (as a whole, individual projects)
- education and training activities, qualifications of young researchers and advancement of women
- knowledge and technology transfer
- efforts to integrate third parties

Aside from SNSF supervision, (IM)2 has its own Scientific and Industrial Advisory Boards who will meet in mid-February in Martigny and also comment on the achievements and perspectives of the NCCR.

ICSI Director Prof. Nelson Morgan visits (IM)2

Prof. Nelson Morgan, Director of the International Computer Science Institute in Berkeley (ICSI) will be in Switzerland the first week of December. He will visit IDIAP, EPFL and the University of Geneva and give talks about current research at ICSI.

The talks are scheduled:

- at IDIAP on Tuesday December 3, 14h00.
- at University of Geneva on Thursday December 5, 10h15, Uni-Mail, 5th floor, room 5393.
- at EPFL on Friday December 6, 11h00, Room EL2.

Aside from the talks, Prof. Morgan will visit the (IM)2 labs in Geneva and Lausanne to further strengthen the links between the two continents. In particular, this will be an excellent opportunity for young researchers to establish contacts in the framework of the young researcher exchange agreement signed between (IM)2 and ICSI. Two students, one from EPFL and one from IDIAP, have already joined the program but there are still openings for 2003.

IDIAP analysis of suspicious bin Laden tape

IDIAP has drawn a tremendous press coverage during the last days of November after being invited by a French TV station to analyse a recording broadcasted by Al Jazeera on November 12, 2002. Full details can be found in the official IDIAP press release at www.idiap.ch.

2003

This is the last (IM)2 Newsletter issue for 2002. We wish you all a peacefull holiday season and a happy new year.

Events

Overview of 2003

The major events for (IM)2 in 2003 include:
on February 13 and 14: the meetings of our Scientific and Industrial Advisory Boards.
in September: the submission of the second annual progress report to SNSF
in early October: the second (IM)2 Summer Institute.
in late October – early November: the SNSF Review Panel Site Visit.

Partner News

SNSF eNewsletter: The Swiss National Science Foundation has a new eNewsletter which brings monthly information by e-mail on calls, events, publications, media communications and general SNF information. Subscription details at www.snf.ch/fr/new/new_ins.asp, current and previous issues at www.snf.ch/fr/new/new_arc.asp.

CAIMAN: Euresearch, the Swiss network of information for European research programs, has setup a new service CAIMAN (Client Alerting and Information MANagement). Once subscribed to the service, you can filter the type and scope of information you want to receive. Full details at www.euresearch.ch.

The (IM)2 Newsletter is a publication of the NCCR on Interactive Multimodal Information Management, hosted by the Dalle Molle Institute for Perceptual Artificial Intelligence, Martigny, Switzerland. The National Centers of Competence in Research are managed by the Swiss National Science Foundation on behalf of the Federal Authorities.

FNSNF
Schweizerischer Nationalfonds
Fonds national suisse
Swiss National Science Foundation

The (IM)2 Newsletter backpage
Every month the (IM)2 Newsletter backpage presents one research group involved in the (IM)2 network: people, projects, research themes, infrastructure, etc.

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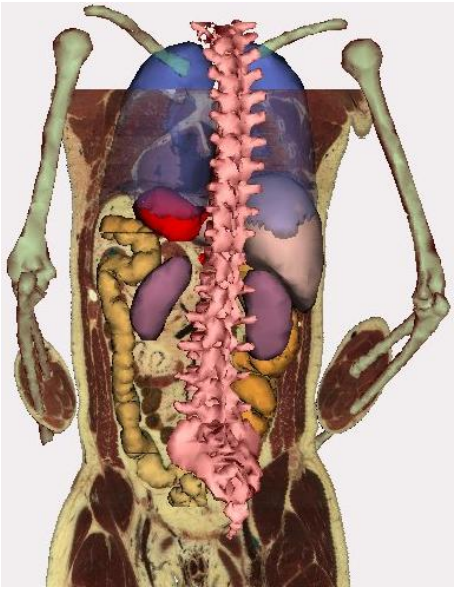
INTERACTIVE MULTIMODAL INFORMATION MANAGEMENT

The Peripheral Systems Lab at EPFL

The Peripheral Systems Lab of EPFL (LSP) aims at creating and exploring new paradigms in fields related to color imaging and media servers. The laboratory is headed by Prof. R.D. Hersch and comprises about 10 researchers, mostly assistants working towards their PhD.

High-performance imaging & media servers

We created a middleware framework relying on parallel schedules for facilitating the specification and development of parallel applications on servers made of PC clusters. Partly relying on this framework, we developed the Visible Human Web Server running on a cluster of PCs and offering slicing, surface extraction, slice animation services. Recent services include real-time navigation within the human body and 3D interactive construction of anatomic structures (visiblehuman.epfl.ch).



Oblique back view of the abdomen created interactively on EPFL's Web server.

Current research is focussed on developing methods for visualizing and comparing anatomic structures located along curvilinear trajectories.

Color reproduction

Physically based models for the prediction of printed colors on ink-jet and electrophotographic printers are being created which may become the base for future automatic printer calibration systems. Advanced color separation and halftoning techniques have been developed, especially for printing with non-standard inks.

Microstructure Imaging

Microstructure imaging allows to synthesize images incorporating visually appealing microstructures. Microstructures are graphic objects specially designed to convey their own message. The microstructure encrustation techniques we have developed rely on the automatic creation of dither matrices or on chromatic color differences. Microstructures can be seen by the naked eye, by a magnifying glass or as a moiré revealed by a dot screen or a micro-lens array.

Girl image formed by a dragon microstructure and a greek frize nanostructure.

The Moiré Phenomenon

A thorough Fourier-based model of the moiré phenomenon has been established, which can be used for both the analysis and synthesis of moiré effects. It provides a full qualitative and quantitative understanding of the moiré effect and has been applied to document authentication and anti-counterfeiting.

Additional achievements

- Continuous media server for delivering slices from a beating heart server
- Parallel file striping on parallel optical disk server systems
- Extension of dithering techniques to color (multi-color dithering)
- Reduction of color gamuts for printing with custom inks
- Color separation for printing with non-standard inks
- Creation of images incorporating microstructures at several levels of detail
- Synthesis of typographic characters by parametrisable components (metatypefaces)
- Synthesis of perceptually-tuned anti-aliased typographic characters

Know-how transfer

The first generation parallelization framework is exploited by company www.axs-tech.com for creating imaging Web servers and by www.radiocontrol.ch for the computation of radio listening rates. The new secure online-tickets offered by the Swiss railways rely on microstructures developed at the Lab, see www.secutix.ch and www.sbb.ch/pv/clickrail.

In the field of color reproduction, know-how transfers were carried out with large companies such as Agfa-Gevaert and Océ.

For further information:
Peripheral Systems Lab, I&C, EPFL
diwww.epfl.ch/w3lsp

rdh

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