

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 Kick-off meeting

The joint (IM)2 and ITS Kick-off meeting on March, 6 was a major success. More than 80 persons attended the meeting and the goal of bringing together the scientists who will work within (IM)2 was fulfilled.



Prof. Bourlard and Dr Ferrez presented the history, structures and Individual Projects (IP) of (IM)2. Prof. Kunt showed the evolution towards the Signal Processing Institute. Dr Wooters presented ICSI and the activities of the Speech group. The presentation of Dr Bengio focused on the torch software library (see www.torch.ch). The official part ended with a discussion on the issue of financing pure or applied research with public or private funds. As expected, the cocktail hosted numerous discussions among the participants from the different institutions and was a privileged occasion to (re)establish contact.

The organizers would like to thank once again the speakers and all participants and look forward to seeing every one again in a future (IM)2 event.

White Papers update

The deadline for the first round of (IM)2 White Papers is now over. 14 proposals were submitted by almost all (IM)2 members, thus assessing the attractiveness of this dynamic funds distribution scheme. The total amount requested in White Papers is almost the double of the available budget, therefore only the best proposals will receive full or partial funding. As of this writing, the proposals are being evaluated and the result will be known during the month of Mai. Most White Papers will start in July and last for 24 months.

The (IM)2 - ICSI Exchange Program

As announced in the previous issue of the newsletter, (IM)2 has an exchange program with the International Computer Science Institute (ICSI) in Berkeley. With this agreement, up to 24 man-months worth of hosting are available every year for PhD students and postdocs working within (IM)2.

To apply, candidates are invited to submit a brief project description. As ICSI and (IM)2 are working on similar topics, in particular a Meeting Recorder, it will benefit all partners if preliminary contacts are established, in particular to define the project and check the availability of specific resources. ICSI has a web page for potential visitors at www.icsi.berkeley.edu/visitor.

More information, including the application form, can be found on the (IM)2 web site at www.im2.ch/icsi-exchange.php.

(IM)2 partners with CIMTEC

The important task of technology transfer within (IM)2 will be carried out in collaboration with CIMTEC. While primarily based in Valais, CIMTEC has traditionally been active in all parts of Switzerland in the framework of the CIM Center of Western Switzerland (CCSO), and all (IM)2 partners will thus benefit from the expertise of the CIMTEC team. More details on the deal and on the (IM)2 strategy regarding technology transfer will be given in a future issue.



Events

Medienseminar BTF 18.4.02

On April 18 in Bern, (IM)2 will have a unique opportunity to present itself. Journalists and members of the Swiss Parliament are invited to a seminar on the 2000-2003 message from the Federal Council on the encouragement of teaching, research and technology. Aside from speeches from Federal Councilors R. Dreyfuss and P. Couchepin, actual examples of the current Swiss strategy will be presented. SNF has selected (IM)2 to demonstrate the NCCR concept, focusing on scientific excellence, organizational independence and autonomous management of resources. (IM)2 will be represented by its Director, Prof. Hervé Bourlard and its Program Manager, Dr Jean-Albert Ferrez.

(IM)2 Inauguration 4.5.02

The official Inauguration of (IM)2 will take place on May 4 in Martigny. The program will be announced later.

(IM)2 Summer Institute 3-8.10.02

From October 3 to October 8, Verbier will host the first (IM)2 internal workshop. This will be the perfect opportunity to look back on the first months of the NCCR, to identify gaps and overlaps in the various research plans.



The Computer Vision Group at UniBern

The Research Group on Computer Vision and Artificial Intelligence was founded in the year 1984 when its leader, Dr. Horst Bunke, was appointed as Professor of Computer Science at the Institute of Informatics and Applied Mathematics of the University of Bern. Since then the group has been working on various topics in the fields of artificial intelligence, pattern recognition and computer vision. Currently it consists of five PhD students (Stefan Fischer, Simon Günter, Christophe Irrniger, Tamas Varga, and Matthias Zimmermann), and five students working towards a diploma degree in Computer Science (Roman Ambauen, Muriel Helmers, Caroline Hertel, Michel Neuhaus, and Nicolas Wrobel). In addition, the group regularly hosts visitors from various institutions all over the world. Funding is provided through the regular institutional budget, the Swiss National Science Foundation, and various other sources.

Research Projects

The research projects conducted during the past five years mainly focused on the following topics:

Handwriting Recognition: While the automatic reading of machine printed text has reached a certain level of maturity, the recognition of handwriting is still in its infancy. In particular the recognition of general text that is written without any constraints by multiple unknown writers is still an unsolved problem. In the past we have collected a database of handwritten text and developed a number of recognizers, mostly based on hidden Markov models. Current research focuses on the use of linguistic knowledge, the application of multiple classifier systems, and the generation of synthetic training data to enhance the recognition performance. Additional topics under investigation include personal identification based on general handwritten text.

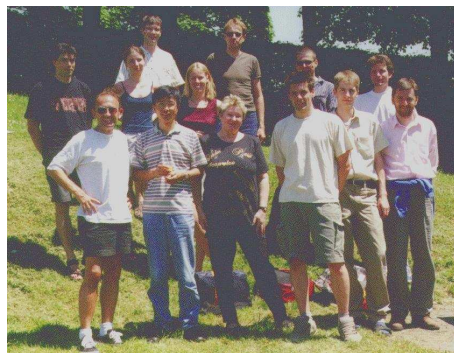
Graph Matching: Graphs are a flexible and powerful representation formalism that has been used in many disciplines of science and engineering. Particularly in artificial intelligence, pattern recognition and computer vision, graph representations have been successfully applied. When graphs are used to represent objects of the underlying domain the recognition problems turns into the task of graph

matching. In our research we have investigated new algorithms for efficient graph matching as well as the extension of various algorithmic tools originally developed for conventional feature space representations to the domain of graphs.

Automatic Diatom Recognition and Identification: Diatoms are unicellular algae that are found in water and places where there is enough humidity for photosynthesis. The identification of diatoms is considered difficult because of the huge number of existing species. In this multidisciplinary project we have developed various procedures for the automatic classification of diatoms by computer.

Range Image Segmentation and Interpretation: In contrast with gray level or color images that provide only information about the reflectance of objects present in a scene, a range images includes three-dimensional information in an explicit fashion. In this project we have investigated the segmentation of range images into planar and non-planar surface patches. Particular emphasis was put on the efficiency of the methods under development. Earlier work was also concerned with the recognition of objects from range images.

Range Image Sequence Analysis and Automatic Interpretation of Traffic Scenes: The goal of this project was to develop robust algorithms for obstacle detection in range images and the tracking of moving objects in range image sequences of low spatial resolution. This work was motivated by potential applications in the automotive industry.



The FKI group.

People

The leader of the group, Horst Bunke, is a Fellow of the International Association for Pattern Recognition (IAPR). He has served the scientific community in various functions. Horst Bunke has been an Editor-in-Charge of the International Journal of Pattern Recognition and Artificial Intelligence (IJPRAI), by World Scientific, Singapore, since its beginning in 1987. He is also an Editor-in-Chief of the newly founded electronic journal Electronic Letters on Computer Vision and Image Analysis (ELCVIA), as well as an Associate Editor of Acta Cybernetica, by Birkhaeuser Verlag, Basel, the International Journal of Document Analysis and Recognition (IJ-DAR), and Pattern Analysis and Application (PAA), both by Springer. Horst Bunke is also Editor-in-Chief of the book series on Machine Perception and Artificial Intelligence by World Scientific. He was Acting President of the IAPR in 1999 and 2000 and Co-Chair of the International Conference on Document Analysis and Recognition (ICDAR) held in Ulm, Germany, in 1997. Presently, he is Co-Chair of the Track Pattern Recognition, Neural Networks, and Document Analysis of the 16-th International Conference on Pattern Recognition (ICPR) to be held 2002 in Quebec and designated Co-Chair of the same track of the same conference to be held 2004 in Cambridge, UK. At the University of Bern, Horst Bunke was department chairman from 1992 to 1996 and Dean of the Faculty of Science from 1997 to 1998. Presently he is a member of the Executive Board of the Faculty of Science.

The scientific work of the group is documented in more than 350 papers and 25 books, authored, co-authored, edited or co-edited by members of the group. For further details please go to the web site www.iam.unibe.ch/~fki/

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