

The (IM)2 Newsletter
Pierre Wellner, recipient of the 2003 UIST «Lasting Impact Paper Award».

Inside the the three **Smart Meeting Rooms** which provide meeting recordings to (IM)2 researchers.

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Editor: Jean-Albert Ferrez
www.im2.ch/nl nl@im2.ch



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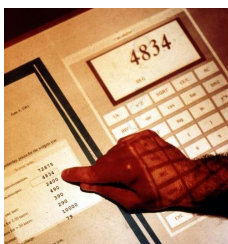
Every month the (IM)2 Newsletter brings you the latest and hottest scientific and administrative news about the (IM)2 NCCR and related topics

Pierre Wellner, recipient of the 2003 UIST «Lasting Impact Paper Award»

At this year's ACM conference on User Interface Software and Technology (UIST 2003), Pierre Wellner, Senior Researcher at IDIAP and Head of the (IM)2 Integration Project (IM)2.IP, will be named as recipient of the **UIST Lasting Impact Paper Award** for his original DigitalDesk UIST paper published in 1991. The recipient of this award is selected by former ACM UIST program committee chairs, and reflects the most "lasting contribution" from papers published at UIST and at least 10 years old.

The aim of the DigitalDesk was to create the opposite of the desktop metaphor. Instead of making the workstation more like the desk, it made the desk more like a workstation, using video cameras and projectors to support computer interaction with physical paper. On the first DigitalDesk (constructed with a lot of tape) one could point at printed numbers on a piece of paper to perform calculations with them. Finger pointing, and digits were recognized by overhead cameras, and results were projected back down onto the paper. This research is considered to be one of the first examples in the area of Human Computer Interaction that became known as Augmented Reality.

UIST (www.acm.org/uist) is the premier forum for innovations in the software and technology of human-computer interfaces. Sponsored by ACM's special interest groups on computer-human interaction (SIGCHI) and computer graphics (SIGGRAPH), UIST brings together researchers and practitioners from diverse areas that include traditional graphical user interfaces, virtual and augmented reality, multimedia, and new input and output devices.



Interacting with Pierre Wellner's DigitalDesk.



The original DigitalDesk setup, with camera and overhead projector.

David Grangier receives the Eurecom Hitachi award for his internship project at IDIAP

Congratulations also to David Grangier, who has received the Hitachi award, granted each year to the best Eurecom student, for his diploma project on «Spoken Document Retrieval» done under the guidance of Alessandro Vinciarelli and Hervé Bourlard. David is now a PhD student at IDIAP in the framework of (IM)2.IIR. See www.idiap.ch/~grangier for more information about David, his work, and the Hitachi award.

From (IM)2 to CMU

Datong Chen, one of the first PhD students to complete his doctoral degree in the framework of (IM)2, has been offered a postdoctoral position at Carnegie Mellon University, Pittsburgh, USA, in the Informedia group, www.informedia.cs.cmu.edu.

Datong's work, under the supervision of Dr Jean-Marc Odobez, IDIAP and Jean-Philippe Thiran, EPFL, focused on text detection and recognition from video sequences. See www.idiap.ch/~chen for more details.

IDIAP at the «Foire du Valais»

Being a non-profit, private research institute, IDIAP has benefited for several years of the support from the Loterie Romande, www.loterie.ch, to account for a part of the costs not covered by research grants. Even though this contribution only amounts to a few percent of the annual budget of IDIAP, it is nevertheless a key element of the Institute's activity since it helps pay for basic support such as furniture, computing servers or networking equipment.



The IDIAP corner on the Loterie Romande booth during the 2003 edition of the Foire du Valais.

The Loterie Romande was one of the guests of the 44th Foire du Valais which took place in Martigny on October 3–12, 2003. It opened a section of its booth to the numerous institutions which benefit from its financial support. As such, IDIAP had the opportunity to present itself and its activities, in particular as the Leading House of (IM)2, one of the 14 Swiss NCCR.

Events

NIPS Workshop 12–13.12.03

As part of the 2003 Neural Information Processing Systems (NIPS) Conference (www.nips.cc), a workshop titled **Machine Learning Meets the User Interface**, is being organized on December 12 or 13th, 2003, in Whistler, British Columbia, Canada by John Shawe-Taylor, University of Southampton, and John C. Platt, Microsoft Research. The workshop is one of the first initiatives of the new EC Network of Excellence PASCAL. Full details of the call can be found at research.microsoft.com/workshops/MLUI03.

Inside the Smart Meeting Rooms

SMR @ ICSI

Despite recent advances in speech recognition technology, successful recognition is limited to co-operative speakers using close-talking microphones. There are, however, many other situations in which speech recognition would be useful - for instance to provide transcripts of meetings or other archive audio. Speech researchers at ICSI, UW, SRI, and IBM are very interested in new application domains of this kind, and we have begun to work with recorded meeting data.

The first stage in investigating speech recognition for meetings is to collect some data. At ICSI, we have equipped a meeting room with a multichannel, studio-quality recording system and have begun to collect pilot recordings of meetings, primarily between speech group members. At the time of writing (2001 February), we have collected 40 hours of 16 channel pilot data, and ten hours has been hand-transcribed. See this information on Meeting Recorder data collection including both the mechanics of the meeting recorder setup at ICSI and some initial forays into processing the recordings. The data were then transcribed, using a set of transcription conventions designed for speed and accuracy of data input and encoding.



The smart meeting room in action at ICSI, www.icsi.berkeley.edu/Speech/mr.

Transcribers used a version of the "Transcriber" interface, modified in two ways to handle multichannel inputs and overlapping speech. For information on our modifications of the Transcriber tool, including screen shots, see here.

A key issue in the project is to specify the goals and applications. While the basic idea is to develop recognition that could transcribe conventional meetings, this would be useful only in so far as it would support applications such as searching for particular information or producing automatic summaries. Here is an introduction to Meeting Recorder: Portable Speech Recognition, which particularly discusses applications for a meeting recorder that could be made portable i.e. like a PDA.

This project is a collaboration between the ICSI speech group (aka Realization), the SSLI lab at the University of Washington (as part of their Communicator project work), and SRI's STAR Lab. Primary funding currently comes from DARPA, and IBM will be providing further support via both collaboration and funding.

SMR @ IDIAP

In the scope of (IM)2 and of the European M4: MultiModal Meeting Manager project, IDIAP has equipped a meeting room with synchronized multimedia acquisition facilities for recording and processing meetings. The Smart Meeting Room multimedia sensors consist of 24 Sennheiser lapel microphones, 3 Sony video cameras, 1 Binaural manikin, 1 Datapath VGA capture card (for high-res presentation slide capture), and 1 eBeam System3 whiteboard activity capture system. The room can accommodate meetings of 4 to 6 participants. In general, each participant wears a lapel microphone, and 16 microphones are used in two eight-ways microphone arrays. This multimedia recording equipment allows:

- Simultaneous acquisition of all audio channels at up to 48kHz per channel with 24-bit resolution;
- Full PAL-quality recording of all video channels onto MiniDV cassettes;
- Capture of unique presentation slides at native VGA resolutions (independent of laptop hardware and presentation software);
- Acquisition of whiteboard pen strokes;
- Accurate synchronisation and timestamping of all recorded multimedia channels (audio, video, presentation slides, whiteboard activity).

Full details of the setup can be found in IDIAP Communication 02-07 (www.idiap.ch → Publications).

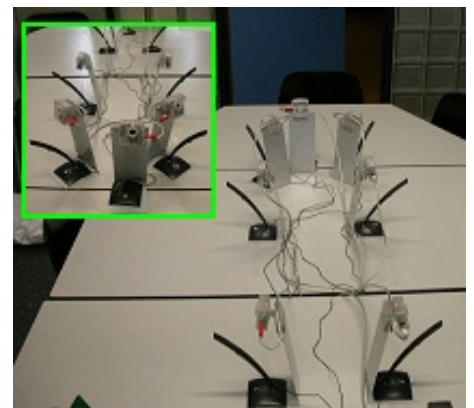


The smart meeting room setup at IDIAP, www.idiap.ch/moore/meeting.

Current work is focused on the specification and collection of meeting recordings corpora and distribution of these corpora through the RhoneData Multimodal Media File Server, mmm.idiap.ch. To date, meeting recording efforts at IDIAP have focused on the compilation of an audio-visual corpus of approximately sixty, five-minute, four-person scripted meetings. A new round of meeting recordings is planned for the near future, with the main aim being to record a variety of real-life meeting scenarios that allow natural, unconstrained dialog between meeting participants. The new recordings will also utilize the recently added whiteboard and presentation slide capture capabilities.

SMR @ UniFR

IM2.DI is dealing with electronic documents as an additional modality to be used for meetings analysis. The goal is to bridge the gap between static documents and other media. Thus, the so-called "document-centric meeting room", is tailored to capture all the phenomena related to documents. The document-centric meeting room is equipped with 10 cameras (8 close-ups, one per participant, 2 overviews), 8 microphones, a video projector, 1 camera for the projection screen capture and several cameras for capturing documents on the table. The equipment is lightweight (PCs with firewire webcams) and not much intrusive. Camera and microphone pairs' synchronization is guaranteed on a per-computer basis. Due to the high bandwidth of each camera (8.8MB/s for 640x480, 15fps), we use 4 remotely controlled PCs to store all the records. A master PC synchronizes these machines, through monitors and sockets, so that recordings start simultaneously. This architecture is thus fully scalable.



The smart meeting room setup at the University of Fribourg.

A meeting capture application, running on the master PC, pilots the slave PCs and their devices. It has a user-friendly interface to start, pause and stop recording, to control post-processing operations such as compression (for streaming and archiving), to monitor file transfers to a server, to specify the cameras and microphones to be used, the participants' position, etc. This package is part of a more general Meeting Organizer application, which assists users in the preparation, management and archiving of a meeting, including services for registering meeting participants, gathering documents and related information.

About 20 meetings, of roughly 15 minutes each, have been recorded so far. Each meeting record is annotated and transcribed and can be either downloaded or streamed (diuf.unifr.ch/im2). As specific scenario, we are currently recording press reviews, i.e. meetings where participants discuss the cover page and the content of daily's newspapers. Additional scenarios including professor lectures, reading clubs, and administrative meetings will be considered in the future.