

# IM2 Newsletter

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## News



### IDIAP 15 Anniversary Workshop

As part of its 15th anniversary celebration, IDIAP will organize a scientific workshop on September 12 and 13, 2006, to be held in Martigny Switzerland.

More information:

<http://www.idiap.ch/ws15/>

### Call for project proposals

The National Center of Competence in Research (NCCR) on Interactive Multimodal Information Management (IM2) is calling for project proposals in its areas of activities (multimedia content structuring and access, with particular emphasis on human-human communication scenes).

More information:

<http://www.im2.ch/newsandpress/call>

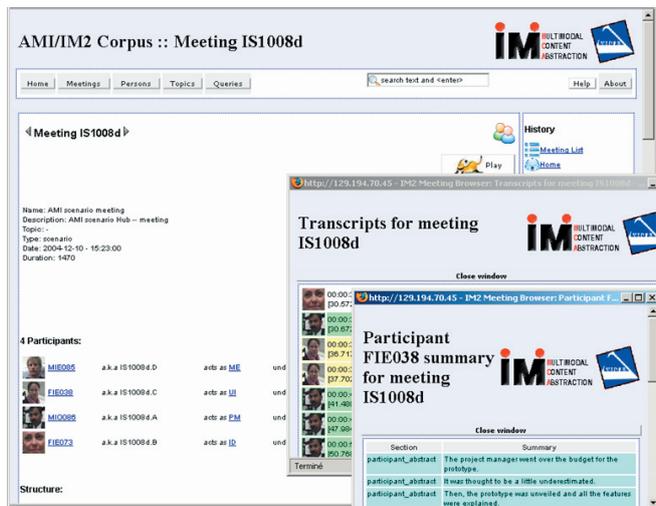
Cover Story

## IM2.MCA and IM2.DMA facilitate the access to the IM2/AMI Meeting Corpus annotations

In June, the IM2/AMI Corpus went live. On a centralized website [1], more than one hundred hours of multi-modal meeting data are now freely available. The scientific community has gained access to the entire database of signals, transcriptions, and annotations, along with digitized handwritten notes, whiteboard, and slide contents. Around two-thirds of the data has been elicited using a scenario in which the participants play different roles in a design team, taking a design project from kick-off to completion over the course of a day. The rest consists of naturally occurring meetings in a range of domains. Detailed information can be found in the July AMI Newsletter or on the website where the corpus was released [1].

In parallel, from individual meeting study and browsing (e.g. JFeret browser, interaction modelling), the IM2 consortium is advancing research on meeting collection management and usage scenarios. To this end, this newly available corpus is an essential resource and its access and inspection should be facilitated. In this context, the IM2 individual projects IM2.MCA and IM2.DMA, through their heads, Stéphane Marchand-Maillet and Andrei Popescu respectively, joined their efforts to facilitate the access to this resource and to advance the construction of an abstract model fitting between the available annotations in NXT format and usage scenarios.

Making the data accessible via a simple and robust method (e.g. SQL queries, simplified object model) is also a key issue for encouraging the use of this data in all analysis processes. Not only should this allow for an easy integration of the various facets of the data but it should permit the creation of new characteristics (annotations) by systematic combination of features extracted from different modalities. A key element that facilitates the access to annotations is the availability of a clear, easily understandable data model, together with a translation procedure for existing annotations (often in NXT or other XML-based format) into the shared data model.



The IM2/AMI meeting collection browser

To be continued on page 2

## IM2.MCA and IM2.DMA facilitate the access to the AMI/IM2 Meeting Corpus annotations Continued from page 1

IM2.MCA aims at defining a cross-meeting and cross-modal information handling framework. Via its support project and as an initial step, IM2.MCA has set up an extensive parsing procedure of the NXT data into a data-driven MySQL schema that translates the annotation format into a relational model without resolving any link. From there, direct access to the IM2.MCA support project database and schema is given within a progress report [4]. This database schema is now being adapted via the Data-Access-Object design pattern on the basis of usage scenarios experimented via a prototype browser [2] (see figure).

IM2.DMA is currently exploring the advantages and drawbacks of different modelling proposals: some are more extreme (create one table for each annotation file as suggested above, or create only one table for all annotations, as in an experiment carried out at IDIAP and HEVs), but a simpler and more usable solution is to create one autonomous table for each annotation dimension (plus tables for metadata), following insights from the TQB and Archivus data models (IM2.HMI). Therefore IM2.DMA currently makes available an XSLT-based toolkit [3] that allows users to parse the NXT annotations, solve the NXT pointers and generate an SQL script plus tables that allow the creation of a relational database with any SQL DBMS.

Therefore, rather than converging on a unique data model, the joint goal of IM2.DMA and IM2.MCA is to provide tools and know-how

to enable transparent transfer between various informationally-equivalent data models.

In turn, the new AMI/IM2 corpus browser is the base for better understanding of cross-meeting data usage. From there, adapted search facilities that combine annotations from different modalities as search criteria should be added. The browser may also be added an edit mode for direct data annotation or consistency maintenance. Further, a direct link to intra-meeting browsers (e.g. JFerret) should be possible, in order to complete the meeting management toolkit provided by IM2.

We believe that the study of a large meeting corpus from a global perspective opens a wide range of new challenges that are still to be understood and resolved.

### References:

- [1] AMI/IM2 Corpus distribution website:  
<http://www.idiap.ch/amicorpus>
- [2] AMI corpus browser:  
<http://vipser.unige.ch/meetingBrowser>
- [3] IM2.DMA parser:  
<http://www.im2.ch/intranet/ips/wiki/DMAConversionToolsAndResults>
- [4] IM2.MCA support project:  
<http://www.im2.ch/intranet/ips/wiki/Progress>

## IM2 expertise proposed to the National Research Programmes (NRP)

In the edge of our NCCR, some IM2 senior's researchers have responded to the last call for National Research Program proposals (March 31, 2006). The three following examples of submission show that the scientific expertise in IM2 can contribute to solving urgent problems of national importance.

### TIME

Hervé Bourlard (IDIAP), in collaboration with Andrei Popopescu-Belis (University of Geneva, ISSCO/ETI), submitted the interdisciplinary project TIME (Technique et applications pour l'accès à l'Information MultilinguE) which suggests helping our country to treat various multilingual problems, such as the translation of the written and spoken language, the access, the abstraction and the summary of the information (independently of the language), and finally, the assistance to learn a language.

### TECHNOLOGY for REMOTE HEALTHCARE

Hynek Hermansky (IDIAP), submitted a proposal addressing the health care needs. This project wants to help our nation to face

dramatic economic pressure with the rising cost of health care and an increasingly aging population. Many recent advances in communications and information technologies are directly applicable, this project propose to study economically feasible methods for addressing the challenges faced by the Swiss government in delivering efficient and high quality health care to all of its citizens. These solutions range from telemedicine, applications to home monitoring systems and interactive knowledge bases to facilitate proactive care in the home.

### SACHER

Finally, the project SACHER (Supporting Access to Cultural Heritage) of Alessandro Vinciarelli (IDIAP) addresses our cultural heritage. Recent advances in electronic technologies have made it possible to convert significant amounts of ancient documents into digital objects. SACHER want to develop and apply new technologies for content extraction, access, abstraction and structuring. In fact, these represent the only possibility for humanities experts to obtain from a simple collection of digital

## Advancement of women in science

Within the framework of the advancement of women in science and in collaboration with the AVPEHP (association valaisanne des parents d'élèves à haut potentiel), IM2 will support the participation of a 14 year old girl, Milène Di Franco, in a scientific adventure.

The holiday camp, called "how it works", which will take place from August 13 to 20 at La Chapelle d'Abondance in France represents an extraordinary opportunity for young children between 11 to 14 year old to discover the world of sciences. According to

recognized methods of teaching, the curiosity of each of them will be triggered in a relaxed atmosphere. Many scientific workshops will be proposed, treating scientific topics such as mechanics, computer science, electronics and so on. For example, Milène will find out, with a lot of fun, how to build a robot.



## IM2 increases its international visibility

### IM2 success at the last US-ARDA VACE (Video Analysis and Content Extraction) call

Building upon their prominent position in the IM2 fields of automatic analysis of multi-party meetings and statistical modeling of multimodal interaction, IDIAP and ICSI submitted last March a joint grant proposal to the US ARDA (Advanced Research and Development Activity) agency to the VACE program call-for-proposals (Phase III, starting in September 2006).

For this competitive research program, the proposal led by Daniel Gatica-Perez (IDIAP) was positively evaluated and granted. The project, entitled ROADMAP (ROBust Automatic Detection of Meeting-events with Audiovisual Perception), aims at automatically discovering and identifying conversational events and trends exhibited by groups in meetings, based on multiple perceptual cues (audio and vision). IDIAP will be the project coordinator, with a subcontract to ICSI. IDIAP will mainly investigate video components (location, head pose, and visual focus of attention of meeting participants) and models for audio-visual data fusion, while ICSI will mainly focus on audio components (computationally efficient speaker diarization and speaker recognition) and computationally-efficient video components (working in the compressed domain). In the framework of this project, part of the large multimedia data sets collected and annotated within IM2 (as well as the EU project AMI) will be used for evaluation by ARDA and other VACE partners.

This success, which leverages on the knowledge acquired during the first phase of IM2, will further contribute to increase the impact of IM2 at the international level.

### IM2.BMI introduced to a panel of experts for the National Science Foundation (USA)

May 2006 was an occasion for IM2 and in particular IM2.BMI to present its research track records, and to increase its already good international visibility to a panel of experts in the field of Brain Computer Interface (BCI) visiting Switzerland.

The experts were part of an International Assessment Panel on BCI organized under the auspices of World Technology Evaluation Center (WTEC) and sponsored by various US government agencies such as National Science Foundation (NSF), Telemedicine & Advanced Technology Research Center (TATRC), Department of Education, and National Institute of Biomedical Imaging and BioEngineering (NBIB). In a first stage, the panel identified five countries outside the United States with advanced activities in BCI research, among which Switzerland. Following a request made to Prof. Touradj Ebrahimi, the Deputy Director of IM2, a visit was organized at EPFL premises on May 31st, to allow the panel members to have the opportunity to find out in more details about the BCI activities in Switzerland and to have face to face interactions with key Swiss researchers in this field.

During the visit, the head of IM2.BMI, Prof. José del R. Millán, presented various activities of his IP, those of IDIAP and HUG, as well as different ongoing European collaborations. Other presenters from EPFL and CHUV also had a chance to present their research activities in this field. A discussion session was an occasion to find out about possible channels for future collaborations and to exchange various ideas and views on future trends in the field of BCI. Key findings of the visits and interactions by the Assessment Panel will be presented at a National Science Foundation workshop held in Arlington, Virginia on July 21, 2006.

## Steering Committee

The first IM2 Steering Committee took place the 8th of May at IDIAP. According to its responsibilities, the steering committee dealt with all non scientific issues of IM2 and defined some objectives for 2006-2007. The following selected actions were suggested:

- The education and knowledge transfer will be consolidated by encouraging strongly Inter-IM2 exchanges. A non exhaustive list of exchange programs in IM2 or related projects, such as AMI, will be soon available on the IM2 website. In the same framework, overview papers and joined publications will be fostered to increase visibility and impact of IM2.
- In the future, more effort will be put on the IM2 "trademark" and on communication, e.g., through TheArk, Alliance (involving several of the IM2 partners), and start-ups. We should encourage IM2-wide initiative and (non technical) publications and increase our presence in the industrial community. The objective is to make people speak about IM2: it is question to inform more and better the press (IBcom, Planet, CVCI, DEWS, etc). The recent membership of IM2 in networks, such as Swissmedia, strengthen this objective.

- Before the second year of Phase II, IM2 should have identified a new «research vision». In this context, a workshop is organized on September 4-5 to brainstorm about possible future «research visions», which could be exploited by the IM2 community. A report will be published at the end of the workshop about the process as well as the conclusions.
- Finally, in the framework of the advancement of women, IM2 will encourage the involvement of women in the high level committees, and should encourage female fellowship in each institution.

### New nomination

The University of Bern decided to nominate Prof. Dr. Horst Bunke as member of the IM2 Steering Committee. Prof. Bunke leads the research group on computer vision and artificial intelligence.



## Upcoming Events

### UIST 2006 15-18.10.06

The nineteenth annual ACM Symposium on User Interface Software and Technology will be held on October 15 - 18 in Montreux, Switzerland. UIST is the premier forum for innovations in the software and technology of human-computer interfaces. This year UIST is co-located with the IEEE Wearables symposium ISWC 2006 which runs the week before. More information is available on <http://uist2006.idiap.ch/>

### HUMANOIDS'06 4-6.12.06

The 2006 IEEE-RAS International Conference on Humanoid Robots will be held on December 4 to 6, 2006 in Genova, Italy. The conference series started in Boston in the year 2000, travelled through Tokyo (2001), Karlsruhe/Munich (2003), Santa Monica (2004), and Tsukuba (2005) and will dock in Genoa in 2006. This year's conference theme, Humanoid Companions, addresses specifically aspects of human-humanoid mutual understanding and co-development. More details on <http://humanoids06.epfl.ch/>

### HCM 2006 27.10.06

The first International Workshop on Human-Centered Multimedia will be held on October 27, 2006, Santa Barbara, USA - in conjunction with ACM Multimedia . <http://staff.science.uva.nl/~nicu/HCM2006/main.htm>

### Ascona 3 19-24.11.06

Interactive media: The enhancement of multilingual communication and learning through technology. ASCONA III (November 19-24, 2006, Ascona, TI). More details on <http://virtualinstitute.eti.unige.ch/InteractiveMedia>

## Partner News

### New Journal

International Journal of Image and Video Processing, Hindawi publishing, will edit a Special Issue on Multimodal Audiovisual Content Abstraction. More information is available on <http://www.hindawi.com/Get-Page.aspx?journal=IJIVP&page=MCA>. Guest editor: Stéphane Marchand-Maillet, IP Head of MCA.

## Awards

### ETH Zurich receives the best video award at the CVPR 2006

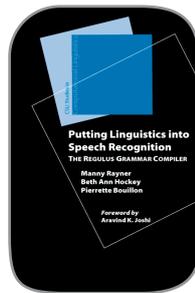
ETH Zurich, in collaboration with researchers from Katholieke Universiteit

Leuven, received the best video award at the 2006 Conf. on Computer Vision and Pattern Recognition, that was held in June in New York. The video features work that combines 3D reconstruction and recognition, and showcases the 'cognitive loop' concept investigated in IM2-based EC Integrated Project 'DIRAC'. The video was selected from over 20 accepted video submissions. The prize comes with a 2000 dollar award, sponsored by Honeywell.

### Alexei Pozdnoukhov finalist of the ICASSP 2006 student paper contest

Alexei Pozdnoukhov, from IDIAP Research Institute, was a finalist of the ICASSP 2006 student paper contest, with his paper «Semi-Supervised Kernel Methods for Regression Estimation», co-authored with Samy Bengio, IDIAP Research Institute.

## Major publications



This book presents a complete description of both the practical and theoretical aspects of the Regulus, including several example applications which can be downloaded from the companion website.

<http://cslipublications.stanford.edu/site/1575865262.html>

Putting Linguistics into Speech Recognition

Manny Rayner, Beth Ann Hockey, and Pierrette Bouillon  
CSLI Publications, Stanford, 2006

Character stream parsing of mixed-lingual text

H. Romsdorfer and B. Pfister

In ISCA Tutorial and Research Workshop on Multilingual Speech and Language Processing (MultiLing 2006), Stellenbosch (South Africa), April 2006

Audio-Visual Tracking of Multiple Speakers in Meetings

D. Gatica-Perez, G. Lathoud, J.-M. Odobez, and I. McCowan

IEEE Trans. on Audio, Speech, and Language Processing, accepted for publication, Mar. 2006

Combining Sample-Based and Analytical Density Propagation for Monocular Tracking (invited)

L. Van Gool, T. Jaeggli, E. Koller-Meier

IEEE CVPR workshop: Learning, Representation and Context for Human

Sensing in Video, June 2006

Learning Multi-Modal Dictionaries: Application to Audiovisual Data

G. Monaci, P. Jost, P. Vanderghenst, B. Mailhe, S. Lesage and R. Gribonval  
Proc. of International Workshop on Multimedia Content Representation, Classification and Security (in Springer-Verlag LNCS series), September 2006

Generation and Evaluation of Brute-Force Signature Forgeries

A. Wahl, J. Hennebert, A. Humm and R. Ingold

International Workshop on Multimedia Content Representation, Classification and Security (in Springer-Verlag LNCS series), September 2006

Indexation de documents manuscrits

A. Vinciarelli

Colloque International Francophone sur l'Écrit et le Document (invited paper), Fribourg (Switzerland), 2006

Adaptation in Brain-Computer Interfaces.

Millán, J. del R., Buttfield, A., Vidaurre, C., Krauledat, M., Schögl, A., Shenoy, P., Blankertz, B., Rao, R.P.N., Cabeza, R., Pfurtscheller, G., and Müller, K.-R.

In G. Dornhege et al. (eds.), Towards Brain-Computing Interfacing. Cambridge, MA: MIT Press, 2006

The Gaussian transform of distributions: definition, computation and application

T. I. Alecu, S. Voloshinovskiy, T. Pun

IEEE Trans. on Signal Processing, Vol. 54, No. 8, Aug. 2006

Brain-computer interaction research at the Computer Vision and Multimedia Laboratory, University of Geneva

T. Pun, T. I. Alecu, G. Chanel, J. Kronegg, S. Voloshynovskiy

IEEE Trans. Neural Systems and Rehabilitation Engineering, Special Issue on Brain-Computer Interaction, Vol. 14, No. 2, June 2006

Asymmetric Learning and Dissimilarity Spaces for Content-based Retrieval,

E. Bruno and N. Moenne-Loccoz and S. Marchand-Maillet

in International Conference on Image and Video Retrieval (CIVR 2006), Tempe, AZ, July 2006

Local Feature Trajectories for Efficient Event-Based Indexing of Video Sequences

N. Moenne-Loccoz and E. Bruno and S. Marchand-Maillet

in International Conference on Image and Video Retrieval (CIVR 2006), Tempe, AZ, July 2006