

IM2 Newsletter

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News

2006-01-05

Press coverage : A new Generation of Meeting Browsers (*Satw Bulletin 4/05*)
<http://www.satw.ch>

2006-02-03

The 36th issue of the IM2 Newsletter is online.

2006-02-03

MLMI'06

REMINDER AND CALL FOR PAPERS

The 3rd Joint Workshop on Multimodal Interaction and Related Machine Learning Algorithms (MLMI'06), jointly sponsored by AMI, Swiss NSF, and several other related EU projects will be held in Washington DC, USA, 1-3 May 2006.

Submission of full papers:
17 February 2006

Additional information:
<http://groups.inf.ed.ac.uk/mlmi06>

Cover Story

IM2 renewed for a second phase of 4 years

SNSF ACCEPTS THE 2006-2009 RESEARCH PLAN

The end of 2005 marked the end of the first phase of our IM2 NCCR, which had been initially granted for four years. On the basis of the full proposal prepared last summer, and the positive feedback from the Review Panel (see page 2 of this issue), SNSF has confirmed on January 18 the continuation of the NCCR for the years 2006-2009.

The first phase of IM2 saw many achievements, among which

- Establishment of a new research area on multimodal interfaces
- Hiring of several world-famous researchers by the various partner institutions
- Initiating a new series of workshops, MLMI, held for the first time in Martigny in 2004, followed by Edinburgh in 2005 and by Washington DC this year (see page 4)
- Collection, annotation and distribution of large databases of meeting recordings
- Collaboration of more than 200 people, including more than a hundred PhD students and 70 postdocs and senior researchers.

2005 ended with the four-day Summer Institute held in Lausanne and which saw for the first time the Review Panel members, the International Scientific and Industrial Advisory Boards members and the IM2 researcher all met at the same time and yielded endless discussions and exchanges. The reports of the different boards, the quality of the talks and posters, the enthusiasm of the participants give us an excellent signal for the success of the second phase.



IM2 Phase two starts now with a redefined organization of the Individual Projects (IP) and new IP heads. While the Smart Meeting Room and its technologies will continue to be the main focus of research and development, a second application will be drafted in the coming years. A new Program Manager, Dr François Foglia is now in charge of the operation of NCCR. The IM2 Web site has been completely redesigned. Last but not least, the Newsletter will continue to be one of the major vector of IM2-related information.

Excerpt from the NCCR IM2 Review Panel Report

Chaired for the first time by Prof. Angelika Steger, ETH Zürich, the IM2 Review Panel met in Lausanne in the framework of the IM2 Summer Institute to assess the fourth annual progress report and the full proposal for the second phase. We quote here some of their conclusions.

The Review Panel is unanimously of the opinion that the research conducted in the NCCR IM2 continued to be of very high quality. The results and publications of the fourth year document the successful efforts of the different IPs. The cooperation between the IPs has continuously increased in the past years. The improvement of the relationship between IDIAP and EPFL Lausanne is positive and should have particularly fruitful effects on the education of students. The agreement between the two institutions is now fully implemented. IDIAP remains independent but has a better academic anchoring into EPFL. IDIAP is teaching 6 courses at EPFL. Three members of IDIAP were appointed EPFL professors (Bourlard: Full Professor; Millan and Hermansky: Professeurs Titulaires) and Prof. Bourlard runs a new EPFL Lab called «LIDIAP» (Laboratory of IDIAP). The forthcoming teaming up with the NCCR MICS by creating the Euler Center in Signal Processing at EPFL is a promising move. The Panel is interested to see how this initiative will develop. The Panel is impressed by the good progress and the various activities in the area of knowledge and technology transfer. The members liked the poster session where they had direct contact to PhD students. They had the impression that the students were much better trained to explain their work and answer to questions than at the last poster session two years ago. There should be a clearer attribution of the posters to the IPs next time.

Scientific coherence and added value progress compared to 1st phase

The phase II proposal presents 8 Individual Projects (IP). The Panel likes the new structure and the definition of the IP topics. While the coherence of the phase I projects has grown from year to year, the IP constellation of phase II seems to be much more coherent from the beginning. Thus more synergetic effects and interactions can be expected in the coming years. The common definition of the IP topics resulted in a structure where many institutions are present in various IPs. This will strengthen the networking character of the different projects. The overall vision of IM2 is well worked out; this holds true for the detailed objectives of the individual projects. The Panel thinks that between these two levels there should be a small set of NCCR-wide and possibly measurable objectives. This will help the IPs to keep target and will serve as a measure for the success of IM2 in general.

Goals regarding Knowledge and Technology Transfert, education, advancement of women, public relations

Knowledge and Technology Transfert

The NCCR was quite active in the area of Knowledge and Technology Transfert in phase I, particularly on the SME level. In phase II IM2 will try to involve also large companies. The participation in European projects will help to get access to new industrial partners and transfer initiatives.

Education

The agreement between IDIAP and EPFL will facilitate the educational activities of the NCCR IM2. The IDIAP PhD students are now participating in the EPFL Doctoral School. The exchange program with ICSI, Berkeley, will be continued.

Advancement of women

The NCCR has made good progress on recruitment of women at lower levels. The advancement on the senior level is still a desideratum. The Panel hopes that the creation of the Euler center can be an opportunity to try to recruit women for senior positions more actively. The IDIAP Fellowship for Female Researchers. is a very positive initiative and should be adopted by other institutions.

Public relations

The NCCR was already quite active so far and has established a refined strategy for the external communication in phase II .

Members of the Review Panel

Steger Angelika, Prof. (Chair), SNSF
Beretta Giordano Bruno, Dr, Hewlett Packard
Chang Shih-Fu, Prof., Columbia University
Hirsbrunner Béat, Prof., SNSF
Jain Ramesch, Prof., Georgia Tech
Jurafsky Dan, Prof., University of Colorado
Opitz-Belakhil Claudia, Prof., SNSF
Ostendorf Maria, Prof., University of Washington
Renals Steve, Prof., University of Edinburgh
Rigoll Gerhard, Prof., Technische Universität München

IDIAP'Bio Login praised at the Swiss Technology Award

IDIAP has recently been praised at the Swiss Technology Award. The mission of the selection committee, composed of most of the Swiss States, several Federal Offices, and well known representatives of the industrial and financial sectors, is to identify the most innovative projects, with the highest commercial potential.

Among the selected projects, the IDIAP «Bio Login» biometric identity authentication system has been invited by OSEC (Swiss Office for Commercial Expansion) to be demonstrated as part of the Swiss Pavillon at the upcoming CeBIT in Hannover, March 9-15, 2006.

The «Bio Login» project has been developed in collaboration with The Ark and the HEVs in Sion, and is based in part on the results of Fabien Cardinaux (see below).

For more information, please contact Frank Crittin. frank.crittin@idiap.ch.

Bio Login: a Bi-Modal (face and speech) Login System

A biometric identity authentication system is based on the characteristics of a person, such as face, voice, fingerprint, iris, gait, hand geometry or signature. It has many applications such an access control (airport checking, monitoring, computer or mobile devices log-in), building gate control, digital multimedia access, transaction authentication (in telephone banking or remote credit card purchases for instance), voice mail, or secure teleworking.



We present Bio Login, a bi-modal authentication system that simulates the login of a user using two natural and non-intrusive characteristics: the face and the voice.

By leveraging IDIAP's expertise in the domains of face and speaker authentication and the fusion of these two modalities, Bio Login combines the voice and facial feature detection of an individual to perform more reliable authentication than techniques based on only one biometric modality.



Fabien Cardinaux has completed his doctoral degree in the framework of (IM)2.



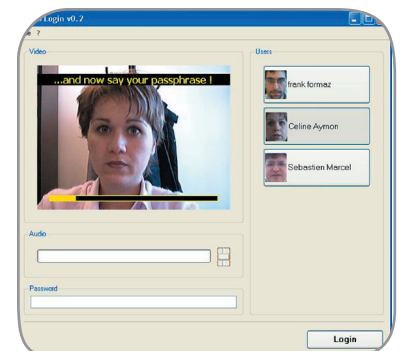
Fabien's work, under the supervision of Dr. Sebastien Marcel, IDIAP and Prof. Jean-Philippe Thiran, EPFL, focused on face authentication. See www.idiap.ch/~cardinau for more details and the IDIAP bi-modal biometric authentication demo <http://www.idiap.ch/~marcell/en/bio-metry.php>.

The principal objective of this thesis, entitled «Face Authentication based on Local Features and Generative Models», was to investigate approaches toward a robust automatic face authentication (AFA) system in weakly constrained environments. In this context, we developed new algorithms based on local features and generative models. In addition, particular attention was given to face localization which is a necessary step of a fully automatic system.

In an authentication scenario, a person claims an identity and, using one or several face images to support this claim, the system classifies the person as either a true claimant (called client) or as an impostor. Unlike face identification, the face authentication task aims to assign a given face image into one of two classes. This task is particularly difficult since any person can be encountered; ie. the impostors have usually not been seen before. One of the other major challenges of AFA is the lack of reference images. Indeed, it is not realistic to have a huge amount of images for

each identity. Usually, only one or a few images are available and they can not cover all the possible variabilities due to different expression, lighting, background, head pose, hair cut, etc.

Generative models such as Gaussian mixture models (GMMs), one-dimensional hidden Markov models (1D-HMMs) and pseudo two-dimensional hidden Markov models (P2D-HMMs) have proved to be efficient for face identification. In this thesis, we proposed to train generative models using maximum a posteriori (MAP) training instead of the traditionally used maximum likelihood (ML) criterion. We experimentally demonstrated the superiority of this approach over other training schemes. The main motivation for the use of MAP training is the ability of this algorithm to estimate robust model parameters when there are only a few training images available.



BioLogin: Login using your face and your voice

Upcoming Events

MLMI'06 10-11.2.05

3rd Joint Workshop on Multimodal Interaction and Related Machine Learning Algorithms, Washington DC, USA, 1-3 May 2006.

The third MLMI workshop is coming to Washington DC, USA, following successful workshops in Martigny, Switzerland (2004) and Edinburgh, UK (2005). MLMI is a joint workshop that brings together researchers from the different communities working on the common theme of advanced machine learning algorithms for processing and structuring multimodal human interaction. The motivation for creating this multidisciplinary workshop arose from an actual need in several of the sponsoring projects.

The workshop will feature talks (including a number of invited speakers), posters, and demonstrations. In common with MLMI'05, the workshop will be immediately followed by the NIST meeting recognition workshop, centering on the Rich Transcription 2006 Meeting Recognition (RT-06) evaluation. This workshop will take place at the same location during 3-4 May 2006.

IMPORTANT DATES

17.02.2006: Submission of full papers
10.03.2006: Submission of extended abstracts and demonstration proposals

MLMI is supported by the US National Institute of Standards and Technology (NIST), through the AMI and CHIL Integrated Projects and the PASCAL Network of Excellence funded by the FP6 IST priority of the European Union, and through IM2.

<http://groups.inf.ed.ac.uk/mlmi06>

SPECOM'2006 25-29.6.06

11th International Conference SPEECH AND COMPUTER (SPECOM'2006), 25-29 June 2006, St. Petersburg, Russia.
<http://www.specom.nw.ru/>

AMR'2006 27-28.6.06

The Viper/CVML group of University of Geneva will organise this summer the 4th International Workshop on Adaptive Multimedia Retrieval.
<http://viper.unige.ch/amr2006>

EUSIPCO 2006 4-8.9.06

The 14th European Conference on Signal Processing, Florence, ITALY, September 4-8, 2006, <http://www.eusipco2006.org/>

PMSB 06 17-18.6.06

Workshop on Probabilistic Modeling and Machine Learning in Structural and Systems Biology, Tuusula, Finland, 17-18 June 2006, <http://www.cs.helsinki.fi/group/bioinfo/events/pmsb06/>

Partner News

New IM2 Program Manager

2006-01-01

Dr Foglia François has completed a PhD in computational chemistry (Molecular Dynamic Simulations Studies, Prof. André Merbach, EPFL) and a MBA in Barcelona, Spain.



After having worked in Edipresse Publications SA as technical manager for its internet department (Edicom), he occupied the position of technical director in a company specialized in the technical and commercial development of start-ups in Europe which were active in new technologies, telecommunications and Internet sectors. Then, he participated in the creation of an e-health portal as associate and CTO, worked in Spain for Nortel Networks in a R&D department (3rd generation mobile phone market). Finally and before joining IDIAP, as technology manager, he managed large IT and security projects in an Accenture's company.

Major publications

MyIdea - Multimodal Biometrics Database, description of acquisition protocols

B. Dumas, C. Pugin, J. Hennebert, D. Petrovska-Delacrétaz, A. Humm, F. Evéquoz, R. Ingold, and D. Von Rotz

Proceedings of COST 275 Workshop, Hatfield, United Kingdoms, pp. 59-62, 27-28 October 2005

Can a Professional Imitator Fool a GMM-Based Speaker Verification System?

J. Mariethoz and S. Bengio

IDIAP Research Report 05-61, 2005

The Gaussian Transform of distributions: definition, computation and application

T. I. Alecu, S. Voloshynovskiy and T. Pun

IEEE Transactions on Signal Processing, accepted for publication, 10.2005

EEG Classification using Generative Independent Component Analysis

S. Chiappa and D. Barber

To appear in Neurocomputing journal

Full Body Tracking by Integrating Multiple Cues

R. Kehl, M. Bray, and L. Van Gool

IEEE International Workshop on modeling People and Human Interaction (PHI'05, in conjunction with ICCV'05), 2005

Analysis of Multimodal Sequences Using Geometric Video Representations

G. Monaci, O. Divorra Escoda and P. Vanderghenst

Accepted in Signal Processing, Special Issue on Multimodal Interfaces - to be published mid 2006

Multimodal Multispeaker Probabilistic Tracking in Meetings

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

In Proc. Int. Conf. on Multimodal Interfaces (ICMI), Trento, Oct. 2005

A Rao-Blackwellized Mixed State Particle Filter for Head Pose Tracking in Meetings

S. Ba and J.-M. Odobez

In Proc. Int. Conf. on Multimodal Interfaces (ICMI), Workshop on Multimodal Multiparty Meeting Processing, pp 9-17, Trento, Oct. 2005.

Threshold Selection for Unsupervised Detection, with an Application to Microphone Arrays

G. Lathoud, M. Magimai-Doss, J.-M. Odobez, and H. Bourlard

IDIAP RR-05-52, October 2005, accepted to ICASSP 200

Integrating a non-probabilistic grammar into large vocabulary continuous speech recognition

R. Beutler, T. Kaufmann, and B. Pfister

In Proceedings of the IEEE ASRU 2005 Workshop, pages 104-109, San Juan (Puerto Rico), November 2005

Modeling Multimedia Data Semantics with MADS

O. Drutskyy and, S. Spaccapietra

To appear in Proceedings of 11th International Conference on Database Systems for Advanced Applications (DASFAA 2006), Springer LNCS