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IM2 Newsletter

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Event

IM2 FINAL EVENT

**As the NCCR is reaching its
12 years, we are organizing
a Final Event on
17-18 October 2013
at the Rolex Learning Center,
EPFL, Lausanne.**

**The program with Keynote speakers
and sessions will be published on the
IM2 website very soon.**

Please do mark your calendar.

Cover Story

IM2 education initiative : Oser tous les métiers

Since a couple years, each Swiss School participates in the Day: "Oser tous les Métiers», an initiative to give a chance to 10-12-year-olds to discover different types of professions. The children are invited to follow one of their parents at work to discover their «working environment».

On this occasion, IM2 and Idiap have welcomed several children. After a short introduction, the children were introduced to the technical aspect of the Institute, meaning the visit of the informatics infrastructures. The servers' rooms and the amount of cables were impressive. Then, two developers introduced them to computer programming. We tried through many discussions to make the children understand that many "professional paths" can lead to the same type of job.

The next step was to discover face and voice recognition and NAO the little Robot. A demonstration of its ability to raise, talk and learn brought sparkle to the childrens' eyes!

They finished the morning with a visit to the Idiap Showroom, where they discoverd how a computer learns to recognize a green cup !

During the afternoon, the children had the great opportunity to build their own robot. Mounting and welding, discovering the secret of electronics, the children brought home their own version of an electronic machine.

The final visits were with a couple of start-ups based on IM2 technologies. There, the young visitors were still really interested in discovering how technology can lead to a company and real products, given the amount of questions asked.

It has been a great opportunity for the children to discover the world of researchers and scientists and overall it was a wonderful exchange time on both sides.

Thanks to all !

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Great success for the International Create Challenge 2012

Great succes for the first edition of the International Create Challenge that ended on September 21. 28 participants, 12 selected projects, and about half of them received one of the numerous prices at stake.

The different awards went to:

3 x 10'000 CHF Cash Prize:
• VocaBoca   • Biomod   • Insight

The Ark Free incubator access Award (Seed Money if the company settles down at the Ark Incubator)
• VocaBoca

The pitch challenge (Each group had to record a "90 sec" pitch video)
• Insight   • Emogen

Award Venture Kick (Give the right to participate to the Venture Kick competition)
• Insight   • Emogen

EuroFin Ventures (One week with Eurofin Ventures communications specialists)
• Biomod   • Insight   • Emogen • Connect4Business

IMD Start-up Competition (the start-ups are added to the list of potential IMD study cases)
• VocaBoca • Biomod   • Insight   • Emogen   • WxM

We are glad to report that 4 out of the 5 IMD Start-up Competitors just won the competition (VocaBoca , Prevue Medical (ex-Biomod), Insight & Emogen) and will become an IMD study Case. During one year, IMD students will build a complete business plan based on the start-up idea.

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Dr Venkatesh Bala Subburaman, IDIAP
ALTERNATIVE SEARCH TECHNIQUES FOR FACE DETECTION

The sliding window approach is the most widely used technique to detect objects from an image. In the past few years, classifiers have been improved in many ways to increase the scanning speed. Apart from the classifier design (such as the cascade), the scanning speed also depends on a number of different factors (such as grid spacing, and scale at which the image is searched). Scanning grid spacing controls the number of subwindows being processed, thus controlling the speed of detection. When the scanning grid spacing is larger than the tolerance of the trained classifier it can suffer from low detections. In this thesis, we propose an alternative search technique, which can improve the detections when lesser number of subwindows are processed.

First, we present a technique to reduce the number of miss detections while increasing the grid spacing when using the sliding window approach for object detection. This is achieved by using a small patch to predict the location of an object within a local search area. To achieve speed, it is necessary that the time taken for location prediction is comparable or better than the time it takes in average for the object classifier to reject a subwindow. We use binary features and a decision tree as it proved to be efficient for our application. In the process we also propose a variation of an existing binary feature (Ferns) with similar performance, and requires only half the number of pixel access when compared to Fern feature.

We analyze the effect of patch size on location estimation and also evaluate our approach on several face databases. Experimental evaluation shows better detection rate and speed with our proposed approach for larger grid spacing (lesser number of subwindows) when compared to standard scanning technique.

We also show that by using a simple interest point detector based on quantized gradient orientation, as the front-end to the proposed location estimation technique, we can achieve better performance even when fewer number of subwindows are processed. The interest points detected can be assumed as a non-regular grid compared to regular grid in the sliding window framework. A few image patches are sampled around an interest point for estimating the probable face location and further verified using a strong face classifier. Experiment results show that using an interest point detector can reduce the number of subwindows processed while maintaining a good detection rate.

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Lantern Solution : a new Start-Up from IM2
CRAFT/EPFL START-UP

LANTERN Solutions Sarl is a start-up company determined to introduce a breakthrough in how technology should serve classroom education. We suggest a novel paradigm in technology-enhanced learning that remains invisible to the teachers when designing the learning activity and to the students when performing it. Lantern is an innovative technology that supports the teacher by providing information about the students' progress in the problem solving session. Lantern is designed to be used in classrooms, when the students are working on an exercise set, individually or in small teams, and the teacher and/or tutors are present to help them.

Start-ups at WorldDidac, Basel 2012

Lantern Solutions Sarl and Simpliquity (a swiss company developing software for collaborative work and learning), two CRAFT/IM2 start-ups were present at Didac Basel, the Global trade fair for educational resources held in Basel from 24 to 26 October

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KeyLemon signs biometric agreement with Fujitsu

KeyLemon has signed a license agreement with Fujitsu which will see KeyLemon's technology used in a new line of desktop PCs.

KeyLemon's aim is to use biometrics to make it easier for users to log in to their devices without the need for multiple or complex passwords.

Fujitsu Technology Solutions has introduced a new desktop PC line, the ESPRIMO X, which will build in KeyLemon's face and voice recognition technology to provide PC users with an enhanced solution for effective identity and access management.

The Fujitsu ESPRIMO X Line models are available to order immediately in Europe, the Middle East, Africa and India.

Dieter Heiss, Vice President Workplace Systems at Fujitsu Technology Solutions explains: "We know that companies are faced with access management problems. Employees are expected to remember multiple passwords with increasingly stronger password policies. With the new ESPRIMO X Line, Fujitsu is able to offer integrated face and voice technology that provides convenient security utilizing the camera module – all you need is a standard webcam and microphone".

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Idiap Awards 2012

Each year, Idiap Research Institute traditionally distributes two awards to PhD Students. This year the two awards go to PhD Students that have been involved in the IM2 research.

The PhD STUDENT RESEARCH PRIZE 2012 goes to David IMSENG for his excellence in the research topic «Multilingual Speech Recognition», his excellent publications and two Berkeley internships.

The PUBLICATION PRIZE 2012 goes to Lakshmi Saheer for her excellent scientific article entitled «Vocal Tract Length Normalization for Statistical Parametric Speech Synthesis», published in the journal «IEEE Transactions on Audio, Speech and Language Processing»

Congratulations to both of them!

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News

ACII - Affective Computing and Intelligent Interaction – held in Geneva in 2013

The 2013 edition of the conference Affective Computing and Intelligent Interaction will be held in Geneva, Sept. 2-5, 2013. Thierry Pun is one of the general chairs, and the conference will be organized by the Computer Vision and Multimedia Laboratory and the Swiss Center for Affective Sciences, UniGe (http://www.acii2013.org/).

This conference gathers about 200 researchers that aim at theoretical findings as well as practical development towards systems that take into account user's affective reactions to ease human-computer interaction. Affective computing research covers a large range of topics and applications from human-robot interaction and gaming to literature and art.

Thierry Pun
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Outstanding Paper Award received by Idiap's researchers at ICMI 2012

The paper «Linking Speaking and Looking Behavior Patterns with Group Composition, Perception, and Performance» by Dinesh Babu Jayagopi, Dairazalia Sanchez-Cortes, Kazuhiro Otsuka, Junji Yamato, and Daniel Gatica-Perez received the Outstanding Paper Award at the ACM Int. Conf. on Multimodal Interaction (ICMI) held in Santa Monica, CA, USA, October 22-26, 2012.

The work was supported by the NISHA collaborative project between Idiap's Social Computing Group and NTT Communication Science Laboratories, Japan, by the SNSF SONVB project, and the EU HUMAVIPS project. Dinesh (postdoctoral researcher at Idiap) is an IM2 PhD student alumni.

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Multimodal Grand Challenges at ICMI (Int. Conf. on Multimodal Interaction) 2012

The first edition of the Multimodal Grand Challenges at the ACM Int. Conf. on Multimodal Interaction (ICMI) was held on October 22, 2012 in Santa Monica, CA, USA. (http://www.acm.org/icmi/2012/).

This year, Challenges were proposed for participation from the research community on four topics: Audio/Visual Emotion Recognition, Haptic Voice Recognition, Brain-Computer Interfaces, and Data Sets for Multimodal Evaluation. Each Challenge held a separate workshop to present the results submitted by the participants and to discuss future actitivies. Over 50 people attended the workshops. The Grand Challenge initiative will be continued in 2013 as part of the next edition of ICMI in Sydney, Australia.

The ICMI 2012 Multimodal Grand Challenges were supported by the PASCAL2 European Network of Excellence.

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Selected publications

Topic modelling of clickthrough data in image search
D. Morrison, T. Tsikrika, V. Hollink, A. P. de Vries, E. Bruno, and S. Marchand-Maillet
in Multimedia Tools and Applications, 2012

Investigating gaze of children with ASD in Naturalistic Settings
B. Noris, J. Nadel, M. Barker, N. Hadjikhani and A. Billard
in Plos ONE ,September 2012

Computing text semantic relatedness using the contents and links of a hypertext encyclopedia
Majid Yazdani and Andrei Popescu-Belisin
Artificial Intelligence Journal, 2012

DEAP: A Database for Emotion Analysis Using Physiological Signals
S. Koelstra, C. Muhl, M. Soleymani, J.-S. Lee, A. Yazdani, T. Ebrahimi, T. Pun, A. Nijholt, and I. Patras
in IEEE Transactions on Affective Computing, 3(1):18-31, January-March 2012

Bridging the gap between social animal and unsocial machine: A survey of social signal processing
Alessandro Vinciarelli, Maja Pantic, Dirk Heylen, C. Pelachaud, I. Poggi, F. D'Errico, and M. Schroeder
in IEEE Transactions on Affective Computing, 2012.

Efficient 3D Object Detection using Multiple Pose-Specific Classifiers
M. Villamizar, H. Grabner, F. Moreno-Noguer, J. Andrade-Cetto, L. Van Gool, and A. Sanfeliu
In Proceedings British Machine Vision Conference (BMVC), 2011

Automatic role recognition
Hugues Salamin and Alessandro Vinciarelli
in multiparty conversations: an approach based on turn organization, prosody and conditional random fields. IEEE Transactions on Multimedia, 2012