Activity Report 2005

Stripped version for internal use

IDIAP–Com 2006-01

March 2006
FOREWORD

This document is a subset of the usual IDIAP annual activity report for internal usage. It contains the sections about the IDIAP staff, educational and scientific activities, and the publication list.

The full, public annual activity report is also available from the IDIAP web site, www.idiap.ch.
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1 Staff

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01.09.04 → 28.02.05

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01.10.04 → 30.09.05

Mr Siew Yeung Wong  
01.01.05 → 30.06.05

Mr Jean-Yves Parfait  
01.02.05 → 30.06.05

Mr David Vandromme  
01.02.05 → 30.06.05

Mr Mikko Lethonen  
01.03.05 → 31.08.05

Mr Tiffany Sauquet  
01.03.05 → 31.08.05

Mr Dhiraj Joshi  
01.07.05 → 30.09.05

Mr Jonathan Rey  
01.07.05 → 30.06.06

Mr Coralie Hemptine  
01.07.05 → 31.08.05

Mr Gustavo De Almeida  
01.07.05 → 30.09.05

Mr Gerwin Van Dorn  
01.09.05 → 31.03.06

Mr Ferran Galan  
01.09.05 → 28.02.06

Mr Octavian Cheng  
01.10.05 → 31.03.06

Mr Jean Keomany  
01.11.05 → 28.02.06

Mr Xavier Perrin  
01.11.05 → 28.02.06

1.3 Visitors

Dr Robert Van Kommer  
Swisscom  
01.12.05 → 31.03.06

Dr Joseph Kesheit  
Hebrew University of Jerusalem  
11.10.05 → 02.11.05

Dr Luc Berthouze  
AIST (Japan)  
01.03.05 → 15.04.05

Mr Friedrich Meyer  
AIST (Japan)  
01.03.05 → 15.04.05

Dr Yves Grandvalet  
Université de Technologie de Compiègne  
01.02.05 → 30.04.05

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Mrs Joanne Schulz (Moore)

HR assistant
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French teacher
2 Educational Activities

2.1 Current PhD Theses

The list of current IDIAP PhD students with their supervisors and key dates is given in the table on next page.

2.2 IDIAP PhD Defenses

- **Ph.D. candidate**: Mohammed F. Benzeghiba  
  **Supervisor**: Hervé Bourlard  
  **Examiners**: Prof. Ch. Wellekens, Prof. Th. Dutuit, Dr B. Pfister  
  **University**: EPFL  
  **Date**: 08.04.05  
  **Title**: On the use of connectionist / generative models for joint speech and speaker recognition

- **Ph.D. candidate**: Mathew Magimai Doss  
  **Supervisor**: Hervé Bourlard  
  **Examiners**: Prof. S. Renals, Prof. R. De Mori  
  **University**: EPFL  
  **Date**: 08.07.05  
  **Title**: Using Auxiliary Sources of Knowledge for Automatic Speech Recognition

- **Ph.D. candidate**: Marc Barnard  
  **Supervisor**: Jean-Marc Odobez  
  **Examiners**: Prof. P. Bouthemy, Prof. G. Rigoll  
  **University**: EPFL  
  **Date**: 24.11.05  
  **Title**: Multimedia Event Modelling and Recognition

- **Ph.D. candidate**: Fabien Cardinaux  
  **Supervisor**: Sébastien Marcel  
  **Examiners**: Prof. J. Kittler, Prof. T. Cootes, Prof. J.-Ph. Thiran  
  **University**: EPFL  
  **Date**: 16.12.05  
  **Title**: Face authentication based on local features and generative models
<table>
<thead>
<tr>
<th>PhD Students</th>
<th>Expected PhD</th>
<th>At IDIAP since</th>
<th>PhD Status</th>
<th>PhD Area</th>
<th>IDIAP Thesis Supervisor(s)</th>
<th>Thesis Director</th>
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<td>Aradilla Zapata</td>
<td>Guillermo</td>
<td>2008</td>
<td>01.04.04</td>
<td>2nd year</td>
<td>SP</td>
<td>J. Vea</td>
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<td>Barnard</td>
<td>Marc</td>
<td>2005</td>
<td>15.03.01</td>
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<td>VI, IR</td>
<td>J. M. Odobez + S. Bengio</td>
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<td>Ba</td>
<td>Sileye</td>
<td>2006</td>
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<td>Hari Krishna</td>
<td>Maganti</td>
<td>2009</td>
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<td>Heusch</td>
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<tr>
<td>Lew Yi Lee</td>
<td>Eileen</td>
<td>2009</td>
<td>01.09.05</td>
<td>1st year</td>
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<td>J. Millan</td>
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<tr>
<td>Maginai Doss</td>
<td>Mathew</td>
<td>2005</td>
<td>25.10.99</td>
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<td>McGreevy</td>
<td>Michael</td>
<td>2006</td>
<td>15.01.03</td>
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<td>Mesot</td>
<td>Bertrand</td>
<td>2008</td>
<td>01.03.04</td>
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<td>2006</td>
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<td>Poh Hoon Thian</td>
<td>Norman</td>
<td>2006</td>
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<td>Pozninokhov</td>
<td>Alexei</td>
<td>2006</td>
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<td>Pedro</td>
<td>2006</td>
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<td>VI</td>
<td>D. Gatica-Perez + S. Bengio</td>
</tr>
</tbody>
</table>

ML: Machine Learning; SP: Speech Processing; VI: Computer Vision; BA: Biometric Authentication; IR: Information Retrieval; MF Multimodal Interaction
2.3 Participation in PhD Thesis Committees

- Ph.D. candidate: Xiang Li  
  Thesis Supervisor: Prof. Richard M. Stern  
  University: Carnegie Mellon University  
  Date: February 2005  
  Title: Combination and Generation of Parallel Feature Streams for Improved Speech Recognition  
  Committee Members: Tsuhan Chen, Rita Sigh, Hynek Hermansky

- HDR ("habilitation à diriger des recherches") candidate: Christophe Ambroise  
  Thesis Supervisor: Geradin Govaert  
  University: Université Technologique de Compiègne  
  Date: June 24, 2005  
  Title: Modèles pour l'apprentissage statistique à partir de données complexes  
  Committee Members: Samy Bengio (IDIAP), Stéphane Canu (INSA, Rouen), Anne Guerin (IMAG, France), Jean-Michel Jolion (INSA, Lyon), Gilles Celeux (INRIA, France), Gerard Govaert (Université Technologique de Rouen)

- Ph.D. candidate: Otmo Zoeter  
  Thesis Supervisor: Tom Heskes  
  University: Radboud University Nijmegen  
  Date: 6.10.2005  
  Title: Monitoring non-linear and switching dynamical systems  
  Committee Members: David Barber, Tom Heskes, Hilbert Kappen, Stan Gielen

- Ph.D. candidate: Nicolas Moënne-Loccoz  
  Thesis Supervisor: T. Pun  
  University: Geneva University  
  Date: 12.12.2006  
  Title: Dynamics of visual components for content-based video management  

- Ph.D. candidate: Serhiy Kosinov  
  Thesis Supervisor: Thierry Pun  
  University: University of Geneva  
  Date: December 12, 2005  
  Title: Machine Learning Approach to Semantic Augmentation of Multimedia Documents for Efficient Access and Retrieval  
  Committee Members: Samy Bengio (IDIAP), Matthieu Cord (ENSEA, France), Eric Bruno (University of Geneva), Stéphane Marchand-Maillet (University of Geneva), Thierry Pun (University of Geneva)
2.4 Courses

- **Title:** Speech Processing
  Lecturer: Prof. H Bourlard
  School: EPFL, Undergraduate (2nd cycle)

- **Title:** Statistical Pattern Recognition with applications to ASR
  Lecturer: Prof. H Bourlard
  School: EPFL, I&C Doctoral School

- **Title:** Statistical Machine Learning from Data
  Lecturer: Samy Bengio
  School: EPFL, Doctoral School

- **Title:** Tutorial on Statistical Machine Learning, with application to Multimodal Interactions
  Lecturer: Samy Bengio
  School: International Conference on Multimodal Interaction (ICMI), October 2005, Trento, Italy.

- **Title:** Speech Processing by Humans and by Machines (One week intensive graduate course)
  Lecturer: Hynek Hermansky
  School: Brno University of Technology

- **Title:** Speech Recognition by Machine
  Lecturer: Hynek Hermansky
  School: Telluride Summer School on Neuromorphic Engineering

- **Title:** Cerveau, Technologie, Invalidité
  Lecturer: José del R. Millán
  School: HES, Sion

- **Title:** Emerging Technologies in Artificial Intelligence and Pattern Recognition
  Lecturer: A. Vinciarelli and J-M. Odobez
  School: Haute école d’ingénierie et de gestion du canton de Vaud (HEIG-VD)

2.5 Short term student projects

- **Trainee:** Cuong Huy To
  Supervisor: Prof. H. Hermansky
  University/School: Hanoi University of Technology, Vietnam

- **Trainee:** Guillaume Hesch
  Supervisor: Dr S. Marcel
  University/School: EPFL

- **Trainee:** Maganti Hari Krishna
  Supervisor: Prof. H. Bourlard
  University/School: Ulm University, Germany
• Trainee: Jean-Yves Parfait  
  Supervisor: Dr J. Vepa  
  University/School: Faculté Polytechnique de Mons, Belgium

• Trainee: David Vandromme  
  Supervisor: Dr A. Vinciarelli  
  University/School: Faculté Polytechnique de Mons, Belgium

• Trainee: Mikko Lethonén  
  Supervisor: Prof. H. Hermansky  
  University/School: EURECOM, France

• Trainee: Tiffany Sauquet  
  Supervisor: Dr S. Marcel  
  University/School: EURECOM, France

• Trainee: Coralie Hemptine  
  Supervisor: Prof. H. Bourlard  
  University/School: Faculté Polytechnique de Mons, Belgium

2.6 Other student projects

• Trainee: Jonathan Rey  
  Supervisor: Frank Formaz  
  University/School: Ecole des Métiers
3 Scientific Activities

3.1 Editorship

Prof. Hervé Bourlard is

- Member of the Editorial Board, Speech Communication
- Member of the Editorial Board, Intl. Journal of Pattern Recognition and Artificial Intelligence
- Member of the Editorial Board, Journal of Negative Results in Speech and Audio, http://journal.speech.cs.cmu.edu/
- Editor of the Special Issue on Biometric Signal Processing of Eurasip Journal on Applied Signal Processing (April 2004)

Prof. Hynek Hermansky is

- Member of the Editorial Board, Speech Communication
- Member of the Editorial Board, Phonetics
- Member of the Editorial Board, Journal of Negative Results in Speech and Audio, http://journal.speech.cs.cmu.edu/
- Editor of Special Issue of EURASIP JASP on Anthropomorphic processing of audio and speech

Dr David Barber is

- Associate Editor for Neurocomputing

Dr Samy Bengio is

- Associate Editor for the Journal of Computational Statistics

3.2 Scientific and Technical Committees

Prof. Hervé Bourlard is:

- Member of the Board of Trustees, Intl. Computer Science Institute, Berkeley, CA, USA
- Member of the European Information Society Technology Advisory Group (ISTAG)
- Fellow of the Engineering and Physical Sciences Research Council (EPSRC), UK
- Member of the Advisory Council of ISCA (International Speech Communication Association)
- Member of the Scientific Committee and area chair for Interspeech’05, Lisbon, September 2005.
- Member of the Scientific committee of MLMI’05, Edinburgh
- Member of the Scientific committee of European Symposium on Artificial Neural Networks, ESANN’05, Brugges
- Expert for several European projects

Prof. Hynek Hermansky is:

- Executive Chairman, 2005 International Conference on Text, Speech and Dialogue, Czech Republic
• Member of the Scientific and Technical Committee, SPECOM 2005, Patras, Greece
• Member of the Scientific and Technical Committee, IEEE Workshop ASRU-2005

Prof. José del R. Millán is
• Member of the Scientific American ThinkBank panel.
• Program Committee Member: 16th European Conf. on Machine Learning, IEEE/RSJ Int. Conf. on Intelligent Robots and Systems 2005, IEEE Int. Conf. on Robotics and Automation 2005, Robotics and Neurobiology Workshop (IWINAC’05 Conference), 8th Catalan Conference on Artificial Intelligence, Ubiquitous Computing and Ambient Intelligence 2005.
• Co-organizer, “Brain-Computer Interface” International Competition III.
• Expert for the European IST Programme.
• Member of the review panel for AGAUR, Catalonia (Spain).

Dr David Barber is
• Member of the review panel for the EPSRC, UK
• Member of the Research Review committee for the STW, The Netherlands

Dr Samy Bengio is
• Program Committee member: NIPS Workshop on Machine Learning for Implicit Feedback and User Modeling (NIPS’2005)
• Program Committee member: International Joint Conference on Artificial Intelligence (IJCAI 2005), Poster Track
• Program Committee member: International Workshop on Biometric Recognition Systems (IW-BRS’2005)
• Program Committee member: IEEE Workshop on Machine Learning for Signal Processing, (MLSP’2005)
• Scientific Committee member: European Symposium on Artificial Neural Networks (ESANN’2005)

Dr Daniel Gatica-Perez is
• Co-Chair, IEEE ICCV Workshop of Modeling People and Human Interaction (PHI), 2005.
• Organizing Committee Member, Int. Conf. on Image and Video Retrieval (CIVR), 2006.
• Technical Program Committee Member
  IEEE Int. Conf. on Computer Vision (ICCV), 2005.
  ACM Int. Conf. on Multimedia (MM), 2006.
  IEEE Int. Conf. on Multimedia (ICME), 2005
  IEEE Int. Conf. on Image Processing (ICIP), 2005.
  Int. Conf. on Image and Video Retrieval (CIVR), 2006.
IEEE Int. Workshop on Technology for Education in Developing Countries (TEDC), 2005.

Dr Jean-Marc Odobez is

- Program Committee Member:
  IEEE CVPR Workshop on Object Tracking and Classification in and Beyond the Visible Spectrum, 2006.
- Technical Program Committee Member:
  IEEE Int. Conf. Multimedia and Expo: 2004,2005
  Int. Conf. Pattern Recognition (ICPR): 2004
  IEEE Int. Conf. on Computer Vision (ICCV): 2005
  NIPS 2005
  IEEE Int. Conf. on Computer Vision and Pattern Recognition (CVPR): 2006

Dr Alessandro Vinciarelli is

- Co-organizer of the International Workshop on Multimodal Multiparty Meeting Processing held in conjunction with International Conference on Multimodal Interfaces (October 2005).

Dr Pierre Wellner is

- Program Committee member: ACM Conference on User Interface Software Technology (UIST 2005).
- Program Committee member: MLMI 04.
- Conference Chair: UIST 2006.
- Editorial Board: Personal and Ubiquitous Computing.

### 3.3 Scientific Presentations (other than conferences)

In this section, we briefly list the scientific events and external (e.g., invited) talks, other than conferences, and which did not necessarily result in a publication.

- **Event**: Saarbrucken University
  **Date**: January 13, 2005
  **Speaker**: Hervé Bourlard
  **Title**: Multi-channel modeling and integration with applications in speech and multimodal processing

- **Event**: Dept. of Computer Science, Università di Verona (Italy)
  **Date**: January 25, 2005
Speaker: José del R. Millán  
Title: Brain-Controlled Robots

- **Event:** Invited talk, Benelarn’2005, Fourteenth Dutch-Belgian Conference on Machine Learning, University of Twente, Enschede, Holland.  
  **Date:** February 2005  
  **Speaker:** Samy Bengio  
  **Title:** Challenges in Multi-Channel Sequence Processing

- **Event:** Invited talk, Signal Theory and Communications Department, Technical University of Catalonia, Barcelona  
  **Date:** Feb. 2005  
  **Speaker:** Daniel Gatica-Perez  
  **Title:** Recognizing human interaction in meetings

- **Event:** Invited talk, Signal Theory and Communications Department, Technical University of Catalonia, Barcelona  
  **Date:** Feb. 2005  
  **Speaker:** Daniel Gatica-Perez  
  **Title:** Audio-visual tracking with sequential Monte Carlo methods

- **Event:** CMU Graduate Seminar  
  **Date:** February 2005  
  **Speaker:** Hynek Hermansky  
  **Title:** Title: Towards a "Primal Sketch" of Speech

- **Event:** EURON Annual Meeting, Neurobotics Workshop, Warsaw (Poland)  
  **Date:** February 17, 2005  
  **Speaker:** José del R. Millán  
  **Title:** Non-Invasive Brain-Controlled Robots

- **Event:** Cigdo “Ciencia y Tecnología”, Ministerio de Educación y Ciencia & Universidad de Oviedo, Gijón (Spain)  
  **Date:** February 25, 2005  
  **Speaker:** José del R. Millán  
  **Title:** Posibilidades de Interacción Cerebro-Ordenador

- **Event:** Seminar Cognition, Université Lumière Lyon 2, Lyon, France  
  **Date:** March 2005  
  **Speaker:** Samy Bengio  
  **Title:** Statistical Machine Learning: Applied to Multi-Channel Sequence Processing

- **Event:** NBIC (Nano-Bio-Info-Cogno) Converging Technologies Forum, Barcelona (Spain)  
  **Date:** March 1, 2005  
  **Speaker:** José del R. Millán  
  **Title:** Brain-Actuated Interaction
• **Event:** Neurology Clinic and Neuroscience Dept., Geneva University (Switzerland)
  **Date:** March 2, 2005
  **Speaker:** José del R. Millán
  **Title:** Brain-Computer Interfaces for Communication and Control

• **Event:** Urbanna-Champaign University
  **Date:** March 28, 2005
  **Speaker:** Hervé Bourlard
  **Title:** Multi-channel modeling and integration with applications in speech and multimodal processing

• **Event:** Irvine University
  **Date:** April 1, 2005
  **Speaker:** Hervé Bourlard
  **Title:** Multi-channel modeling and integration with applications in speech and multimodal processing

• **Event:** Bristol University Engineering Department
  **Date:** April 4, 2005
  **Speaker:** David Barber
  **Title:** Inference methods in machine learning

• **Event:** Florida Tech
  **Date:** April 4, 2005
  **Speaker:** Hervé Bourlard
  **Title:** Multi-channel modeling and integration with applications in speech and multimodal processing

• **Event:** Edinburgh University Informatics Department
  **Date:** May 9, 2005
  **Speaker:** David Barber
  **Title:** Expectation Correction for Switching Linear Gaussian Dynamical Systems

• **Event:** Forum Engelberg, Lucerne
  **Date:** May 22-25, 2005
  **Speaker:** Hervé Bourlard
  **Title:** Invited speaker (2 talks): Computer Enhanced Group Communication in Meetings; A Few (Technical and Operational) Challenges in the Evolution of the IST 7th FWP

• **Event:** Société Valaisanne de Physique, Sion (Switzerland)
  **Date:** June 10, 2005
  **Speaker:** José del R. Millán
  **Title:** Interfaces Cérébrales: De la Pensée à l’Action

• **Event:** Ulm University
  **Date:** June 27, 2005
  **Speaker:** Hervé Bourlard
Title: Multi-channel modeling and integration with applications in speech and multimodal processing

- Event: EU - INI Workshop: Integration of neuromorphic systems for sensory-motor processing, ETH Zurich
  Date: July 2005
  Speaker: Hynek Hermansky
  Title: Human-Like Speech Information Processing

- Event: SNN Radboud University Nijmegen
  Date: October 5, 2005
  Speaker: David Barber
  Title: Kernelized Information theoretic Clustering

- Event: International Conference on Multimodal interfaces Trento
  Date: October 5, 2005
  Speaker: Hervé Bourlard
  Title: Invited panel discussion on: Multinational Cooperation on Multimodal Interaction

- Event: University of Amsterdam, Informatics Institute
  Date: October 7, 2005
  Speaker: David Barber
  Title: New Information theoretic approaches to Clustering

- Event: Swiss Summit on ICT Next Generation Networks and Services, Fribourg
  Date: 31 October 2005
  Speaker: Hervé Bourlard
  Title: Some ICT trends in multimodal processing at IDIAP and the EU

- Event: Institute for Neuroinformatics, ETH Zurich
  Date: November 2005
  Speaker: Hynek Hermansky
  Title: Towards bio-consistent processing of acoustic signals

- Event: Invited talk, School of Computer Engineering, Nanyang Technological University, Singapore
  Date: Nov. 2005
  Speaker: Daniel Gatica-Perez
  Title: Modeling group interaction in meetings

- Event: Computer Science Faculty, Univ. of Karlsruhe (Germany). Distinguished Lecture
  Date: November 28, 2005
  Speaker: José del R. Millán
  Title: Non-Invasive Brain-Controlled Robots

- Event: ASRU ’05, San Juan, Puerto Rico
  Date: Nov 28-Dec. 1, 2005
  Speaker: Hervé Bourlard
  Title: 3 invited panel discussions: ASR Funding: Successes and Pitfalls; What about large scale unsupervised learning?; Next ASR challenges: Computer Enhanced Group Communication in Meetings

4.1 Articles in International Journals


4.2 Articles in Conference Proceedings


4.3 IDIAP Research Reports


4.4 IDIAP Communications


4.5 Other Documents


