Activity Report 2004

Stripped version for internal use

IDIAP–Com 2005-01

February 2005
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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<td>→ 30.06.04</td>
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</tr>
</tbody>
</table>

*Dates indicate the start date of employment.*
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Mr Jérôme KOWALCZYK 01.12.03 → 30.06.04

Mr Julien TIPHAIGNE 01.12.03 → 30.06.04

Mr Marios ATHINEOS 01.01.04 → 31.03.04

Mr Lucas PEREZ 01.01.04 → 30.09.04

Mr Marc SABAN 01.01.04 → 30.06.04

Mr Thierry LEPHILIBERT 01.02.04 → 31.07.04

Mr Frederic RENKENS 01.02.04 → 31.05.04

Mr Cuong Huy TO 01.03.04 → 31.01.05

Mr Mike PERROW 01.08.04 → 30.11.04

Mr Nabil DADDAOUA 01.08.04 → 31.10.04

Mr Guillaume HEUSCH 01.09.04 → 28.02.05

Mr Maganti HARI KRISHNA 01.10.04 → 30.09.05
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2 Educational Activities

2.1 Current PhD Theses

The list of current IDIAP PhD students, together with their PhD projects and funding sources, is summarized in the table on next page.

2.2 IDIAP PhD Defenses

- **Ph.D. candidate:** Ronan Collobert
  **Supervisor:** Samy Bengio
  **University:** Université de Paris 6
  **Date:** 28 June 2004
  **Title:** Large Scale Machine Learning

- **Ph.D. candidate:** Beat Fasel
  **Supervisor:** Prof. Dr. L. Van Gool (ETH Zürich)
  **Co-Supervisor:** Prof. H. Bourlard (EPF Lausanne)
  **University:** ETHZ
  **Date:** 22 September 2004
  **Title:** Automatic Facial Expression Analysis with Data-Driven Methods

- **Ph.D. candidate:** Jitendra Ajmera
  **Supervisor:** Prof. H. Bourlard (EPF Lausanne)
  **Examiners:** I. McCowan, A. Drygajlo, D. Ellis, Ch. Wellekens
  **University:** EPFL
  **Date:** 27 May 2004
  **Title:** Robust Audio Segmentation

- **Ph.D. candidate:** Shajith Ikbal
  **Supervisor:** Prof. H. Bourlard (EPF Lausanne)
  **Examiners:** H. Hermansky, R. Stern, P. Vandergheynst, H. Ney
  **University:** EPFL
  **Date:** 1 November 2004
  **Title:** Robust Speech Recognition using HMM2
<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>
</tr>
</thead>
<tbody>
<tr>
<td>Ajmera Jitendra</td>
<td>2004</td>
<td>01.01.01</td>
<td>Completed</td>
<td>SP</td>
<td>H. Bourlard</td>
<td>Prof. H. Bourlard, EPFL</td>
</tr>
<tr>
<td>Aradilla Zapata</td>
<td>2008</td>
<td>01.04.04</td>
<td>1st year</td>
<td>SP</td>
<td>H. Bourlard</td>
<td>Prof. H. Bourlard, EPFL</td>
</tr>
<tr>
<td>Ba Sileye</td>
<td>2006</td>
<td>10.01.02</td>
<td>3rd year</td>
<td>VI</td>
<td>J.M. Odobez + S. Bengio</td>
<td>Not decided yet</td>
</tr>
<tr>
<td>Barnard Marc</td>
<td>2005</td>
<td>15.03.01</td>
<td>4th year</td>
<td>VLIR</td>
<td>J.M. Odobez + S. Bengio</td>
<td>Prof. H. Bourlard, EPFL</td>
</tr>
<tr>
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<td>MI</td>
<td>J. Millan</td>
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<tr>
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<td>4th year</td>
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<td>ML</td>
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<td>2nd year</td>
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<td>SP</td>
<td>H. Bourlard</td>
<td>Prof. Sridharan, QUT</td>
</tr>
<tr>
<td>Mesot Bertrand</td>
<td>2008</td>
<td>01.03.04</td>
<td>1st year</td>
<td>ML,SP</td>
<td>D. Barber</td>
<td>Not decided yet</td>
</tr>
<tr>
<td>Misra Hemant</td>
<td>2005</td>
<td>24.07.01</td>
<td>4th year</td>
<td>SP</td>
<td>H. Bourlard</td>
<td>Prof. H. Bourlard, EPFL</td>
</tr>
<tr>
<td>Monay Florent</td>
<td>2006</td>
<td>01.08.02</td>
<td>3rd year</td>
<td>VLIR</td>
<td>D. Gatica-Perez + S. Bengio</td>
<td>Prof. H. Bourlard, EPFL</td>
</tr>
<tr>
<td>Paiement Jean-François</td>
<td>2007</td>
<td>01.01.04</td>
<td>1st year</td>
<td>ML</td>
<td>S. Bengio</td>
<td>Not decided yet</td>
</tr>
<tr>
<td>Perrow Mike</td>
<td>2008</td>
<td>01.12.04</td>
<td>1st year</td>
<td>IR</td>
<td>D. Barber</td>
<td>Not decided yet</td>
</tr>
<tr>
<td>Poh Hoon Thian Norman</td>
<td>2006</td>
<td>01.08.02</td>
<td>3rd year</td>
<td>BA</td>
<td>S. Bengio</td>
<td>Prof. H. Bourlard, EPFL</td>
</tr>
<tr>
<td>Pozdnoukhov Alexei</td>
<td>2006</td>
<td>01.01.03</td>
<td>3rd year</td>
<td>ML</td>
<td>S. Bengio</td>
<td>Prof. H. Bourlard, EPFL</td>
</tr>
<tr>
<td>Quehlas Pedro</td>
<td>2006</td>
<td>01.11.02</td>
<td>3rd year</td>
<td>VLIR</td>
<td>J.M. Odobez + S. Bengio</td>
<td>Prof. H. Bourlard, EPFL</td>
</tr>
<tr>
<td>Rodriguez Yann</td>
<td>2006</td>
<td>01.09.02</td>
<td>3rd year</td>
<td>VLBA</td>
<td>S. Marcel + S. Bengio</td>
<td>Prof. H. Bourlard, EPFL</td>
</tr>
<tr>
<td>Smith Kevin</td>
<td>2006</td>
<td>21.11.02</td>
<td>3rd year</td>
<td>VI</td>
<td>D. Gatica-Perez + S. Bengio</td>
<td>Prof. H. Bourlard, EPFL</td>
</tr>
<tr>
<td>Wans Nanne</td>
<td>resigned</td>
<td>01.10.04</td>
<td></td>
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<tr>
<td>Zhang Dong</td>
<td>2007</td>
<td>01.08.03</td>
<td>2nd year</td>
<td>VI</td>
<td>D. Gatica-Perez + S. Bengio</td>
<td>Prof. H. Bourlard, EPFL</td>
</tr>
</tbody>
</table>

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

- **Ph.D. candidate:** Andre Adami  
  **Thesis Supervisor:** Hynek Hermansky  
  **University:** OGI School of Oregon Health and Sciences University  
  **Date:** February 24, 2004  
  **Title:** Modeling Prosodic Differences for Speaker and Language Recognition  
  **Committee Members** Hynek Hermansky, Misha Pavel, Jan van Santeen, Douglas A. Reynolds, John J. Goodfroy

- **Ph.D. candidate:** Mathieu Ben  
  **Committee member:** Samy Bengio  
  **University:** Université de Rennes  
  **Date:** 23 November 2004  
  **Title:** Approches robustes pour la vérification automatique du locuteur par normalisation et adaptation hiérarchique

- **Ph.D. candidate:** Lukas Burget  
  **Committee member:** Hynek Hermansky  
  **University:** Brno University of Technology  
  **Date:** November 2004  
  **Title:** Complementarity of Speech Recognition Systems and System Combination

- **Ph.D. candidate:** Ali Taylan Cemgil  
  **Committee member:** David Barber  
  **University:** Nijmegen  
  **Date:** 14 September 2004  
  **Title:** Bayesian Music Transcription

- **Ph.D. candidate:** Vlad Popovici  
  **Committee member:** Samy Bengio  
  **University:** EPFL  
  **Date:** 16 November 2004  
  **Title:** Kernel-based Classifiers with Applications to Face Detection

- **Ph.D. candidate:** David Serby  
  **Thesis Supervisor:** Luc Van Gool  
  **University:** ETHZ  
  **Date:** September 2004  
  **Committee Member** Jean-Marc Odobez  
  **Title:** Multiple Feature Tracking

- **Ph.D. candidate:** Sunil Sivadas  
  **Thesis Supervisor:** Hynek Hermansky  
  **University:** OGI School of Oregon Health and Sciences University  
  **Date:** August 23, 2004
Committee Members  Hynek Hermansky, Misha Pavel, Nelson Morgan, Jordan Cohen
Title:  Tandem Feature Extraction for Automatic Speech Recognition

• Ph.D. candidate:  Georg Stremmer
  Committee member:  Hynek Hermansky
  University:  University of Erlangen
  Date:  October 2004
  Title:  Modeling Variability in Speech Recognition

• Ph.D. candidate:  Sri Suryakanth V Gangashetty
  Committee member:  Hynek Hermansky
  University:  Indian Institute of Technology, Madras
  Date:  20 December 2004
  Title:  Neural Network Models for Recognition of Consonant-Vowel Units of Speech in Multiple Languages

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:  Graphical Models
  Lecturer:  Dr David Barber
  School:  IDIAP

• Title:  ANN for face detection and recognition
  Lecturer:  Dr Sébastien Marcel
  School:  Commision Romande de Mathematique http://www.vsmp.ch/crm/Rap_cours-04.htm

2.5 Short term student projects

• Trainee:  Guillermo Zapata Aradilla
  Supervisor:  John Dines
  University/School:  Catalunya
  Date:  September 2003 to February 2004

• Trainee:  Jérôme Kowalczyk
  Supervisor:  Hervé Bourlard
  University/School:  Ecole Nouvelle d’Ingénieurs en Communication
  Date:  December 2003 to June 2004

• Trainee:  Julien Tiphaigne
Supervisor: Sébastien Marcel  
University/School: Ecole Nouvelle d’Ingénieurs en Communication  
Date: December 2003 to June 2004

- Trainee: Marios Athineos  
  Supervisor: Hynek Hermansky  
  University/School: Columbia University  
  Date: January 2004 to March 2004

- Trainee: Lucas Perez  
  Supervisor: José del R. Millán  
  University/School: EPFL / Eurecom  
  Date: January 2004 to September 2004

- Trainee: Marc Saban  
  Supervisor: Hervé Bourlard  
  University/School: Eurecom  
  Date: January 2004 to June 2004

- Trainee: Thierry Lephilibert  
  Supervisor: Jean-Marc Odobez  
  University/School: Eurecom  
  Date: February 2004 to July 2004

- Trainee: Frederic Renkens  
  Supervisor: José del R. Millán  
  University/School:  
  Date: February 2004 to May 2004

- Trainee: Cuong Huy To  
  Supervisor: Hynek Hermansky  
  University/School: University of Hanoi  
  Date: March 2004 to January 2005

- Trainee: Mike Perrow  
  Supervisor: David Barber  
  University/School: Edinburgh  
  Date: August 2004 to November 2004

- Trainee: Nabil Daddaoua  
  Supervisor: Alessandro Vinciarelli  
  University/School: University of Genova (Italy)  
  Date: August 2004 to October 2004

- Trainee: Guillaume Heusch  
  Supervisor: Hervé Bourlard  
  University/School: EPFL
Trainee: Maganti Hari Krishna  
Supervisor: Hervé Bourlard  
University/School: University of ULM  
Date: October 2004 to September 2005

2.6 Other student projects

Trainee: Tristan Carron  
Committee member: Frank Formaz  
University/School: ESIS  
Date: September 2004 - January 2005  
Title: bibIDIAP 2.0
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/](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, Phonetica
- Member of the Editorial Board, Journal of Negative Results in Speech and Audio, [http://journal.speech.cs.cmu.edu/](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 Advisory Board of the European Speech Technology Network
- Program and/or scientific committee member of numerous conferences (W3C Workshop on Multimodal Interaction (2004), ASRU’04, Interspeech’05, ICBA’06)
- Expert for several European projects

Prof. Hynek Hermansky is:

- Member of the Board, International Speech Communication Association
- Executive Chairman, 2004 International Conference on Text, Speech and Dialogue, Czech Republic
- Member of the Scientific Committee, 2004 Workshop on Statistical and Perceptual Audio Processing
• Member of the Scientific Committee, Speaker Odyssey 2004 Speaker and Language Recognition Workshop

• Member of the Scientific Committee, 2004 Workshop on Multimodal Interaction and Related Machine Learning Algorithms

• Expert for European Community

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

• General Chair: Joint AMI/PASCAL/IM2/M4 Workshop on Multimodal Interaction and Related Machine Learning Algorithms (MLMI’2004)

• Co-Chair: NIPS Workshop on Multimodal Signal Processing (NIPS’2004)

• Program Chair: IEEE Workshop on Neural Networks for Signal Processing (NNSP’2004)

• Program Committee member: Spatial Interpolation Comparison (SIC’2004)

• Program Committee member: International Conference on Machine Learning (ICML’2004)

• Program Committee member: IEEE Workshop on Machine Learning for Signal Processing, (MLSP’2004)

• Scientific Committee member: European Symposium on Artificial Neural Networks (ESANN’2004)

Dr Daniel Gatica-Perez is

• Multimedia Processing Area Chair, IEEE Int. Conf. on Multimedia and Expo (ICME), 2004.

• Technical Program Committee Member

  – IEEE Int. Conf. on Multimedia and Expo (ICME): 2004, 2005


Dr José del R. Millán is

• Program Committee Member: 15th European Conf. on Machine Learning, IEEE/RSJ Int. Conf. on Intelligent Robots and Systems 2004, IEEE Int. Conf. on Robotics and Automation 2004.


• Expert for the European IST Programme.

Dr Jean-Marc Odobez is

• Program Committee Member: IEEE Int. Workshop on Neural Networks for Signal Processing (NNSP), 2003.

Dr Pierre Wellner is

• Program Committee member: ACM Conference on User Interface Software Technology (UIST 2005).
• Demonstrations co-chair: UIST 2004.
• Program Committee member: MLMI 04.
• Conference Chair: UIST 2006.
• Editorial Board: Personal and Ubiquitous Computing.

### 3.3 Short Term Visits

- **Location:** OGI School of Oregon Health and Sciences University  
  **Visitor:** Hynek Hermansky  
  **Date:** February 2004

- **Location:** University of Paris 6, Pierre et Marie Curie  
  **Visitor:** Samy Bengio  
  **Date:** 28 June 2004

- **Location:** University of Colorado, Boulder  
  **Visitor:** Hynek Hermansky  
  **Date:** July 2004

- **Location:** Sheffield University  
  **Visitor:** Darren Moore  
  **Date:** August-September 2004

### 3.4 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:** Colloquium on Physical Acoustics, Medical Physics and Speech Signal Processing, Oldenburg University  
  **Date:** January 2004  
  **Speaker:** Daniel Gatica-Perez  
  **Title:** Multisensor speaker tracking with sequential Monte Carlo methods

- **Event:** Invited Speaker, Special Workshop in Maui (SWIM), Maui, Hawaii  
  **Date:** January 2004  
  **Speaker:** Hervé Bourlard  
  **Title:**

- **Event:** Invited Speaker, Special Workshop in Maui (SWIM), Maui, Hawaii  
  **Date:** January 2004
Speaker: Hynek Hermansky
Title: My years at the University of Tokyo: Introducing Prof. Hiroya Fujisaki

- **Event**: Brain Awareness Week, The European Dana Alliance for the Brain, Lausanne (Switzerland)
  **Date**: March 16, 2004
  **Speaker**: José del R. Millán
  **Title**: Interfaces Cérébrales: De la Pensée à l’Action

- **Event**: Ben Gurion University of the Negev
  **Date**: April 2004
  **Speaker**: Alessandro Vinciarelli
  **Title**: Noisy Text Categorization

- **Event**: Doctoral School on “Neurosciences”, Swiss Federal Institute of Technology Lausanne-Univ. de Lausanne-Univ. de Gèneve
  **Date**: May 4, 2004
  **Speaker**: José del R. Millán
  **Title**: Brain-Computer Interfaces

- **Event**: SIMILAR NoE Workshop on Multimodal Processing, EPFL, Lausanne
  **Date**: May 2004
  **Speaker**: Daniel Gatica-Perez
  **Title**: Sequential Monte Carlo methods for multimodal tracking

- **Event**: Dendritic Modelling Workshop, International Institute Mathematical Sciences, Edinburgh
  **Speaker**: David Barber
  **Date**: 18th June 2004
  **Title**: A tentative framework for learning with Dendritic Spines

- **Event**: Human Interface Technology Lab, University of Washington
  **Date**: June 2004
  **Speaker**: Daniel Gatica-Perez
  **Title**: Multimodal analysis of human activity in meetings

- **Event**: Summer School of the European Masters in Language and Speech.
  **Speaker**: Iain McCowan
  **Date**: 12 July 2004
  **Title**: The AMI Project

- **Event**: Invited faculty at the Workshop on Neuromorphic Engineering, Telluride, USA
  **Date**: July 2004
  **Speaker**: Hynek Hermansky
  **Title**: Speech Processing

- **Event**: Invited talk, Center for Speech Technology Research, University of Colorado, Boulder
  **Date**: July 2004
  **Speaker**: Hynek Hermansky
Title: Arguments against short-term spectrum of speech

- Event: Invited Faculty, International Graduate School for Neurosensory Science and Systems Summer School "Object formation in audition and vision: Bottom-up and top-down processing", Bad Zwischenahn, Germany
  
  Date: August 2004
  
  Speaker: Hynek Hermansky

Title: Beyond short-term analysis of dynamic acoustic signal

- Event: Invited Speaker, International Conference "Auditory Scene Analysis and Speech Perception by Human and Machine", Delmenhorst, Germany
  
  Date: August 2004
  
  Speaker: Hynek Hermansky

Title: Linguistic code from probabilities of acoustic events

- Event: Invited Speaker, Machine Learning Workshop, Sheffield University
  
  Speaker: Hervé Bourlard
  
  Date: September 2004

Title:

- Event: Centro Nacional de Microelectrónica, Barcelona (Spain)
  
  Date: September 3, 2004
  
  Speaker: José del R. Millán

Title: Brain-Actuated Interaction

- Event: Stichting Neuronale Netwerken, Raboud University Nijmegen
  
  Speaker: David Barber
  
  Date: 13th September 2004

Title: Mutual Information Bounds

  
  Date: September 28-October 2, 2004
  
  Speaker: José del R. Millán

Title: Brain-Controlled Robots

- Event: Fuji-Xerox Research Laboratories
  
  Date: October 2004
  
  Speaker: Alessandro Vinciarelli

Title: Application of Information Retrieval to Presentation Slides

- Event: XXII Congreso Anual de la Sociedad Española de Ingeniería Biomédica. Santiago de Compostela (Spain).
  
  Date: November 11-13, 2004
  
  Speaker: José del R. Millán

Title: Conveying Intents Directly to Computers: The Brain Channel

- Event: Summer School of the French Society of Statisticians
Date: November 2004  
**Speaker:** Samy Bengio  
**Title:** Statistical Machine Learning  

- **Event:** Dept. of Electrical Engineering, University of Washington  
  Date: December 2004  
  Speaker: Daniel Gatica-Perez  
  Title: Multimodal multiperson tracking in meetings

- **Event:** Invited Keynote Speaker, ISSNIP 2004 Workshop on Biologically Inspired Models, Melbourne, Australia  
  Speaker: Hynek Hermansky  
  Date: December 2004  
  Title: Temporal Information-Bearing Elements of Speech

- **Event:** Invited Talk, University of Saarbrucken  
  Speaker: Hervé Bourlard  
  Date: January 2005  
  Title: Hierarchical Multi Channel Processing and related applications at IDIAP
4 Publications (2003 and 2004)

4.1 Articles in International Journals


### 4.2 Articles in Conference Proceedings


[73] F. Monay and D. Gatica-Perez, On image auto-annotation with latent space models, in Proc. ACM Int. Conf. on Multimedia (ACM MM), Nov. 2003.


4.3 IDIAP Research Reports


4.4 IDIAP Communications


4.5 Other Documents