

IDIAP COMMUNICATION



ACTIVITY REPORT 2004

Stripped version for internal use

IDIAP-COM 2005-01

FEBRUARY 2005



IDIAP Research Institute

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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1.1 Scientific Staff

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| Mr | Michael MCGREEVY Michael.McGreevy@idiap.ch | Research Assistant +41 27 721 77 35 | |
| Mr | Bertrand MESOT Bertrand.mesot@idiap.ch | Research Assistant +41 27 721 77 82 | 01.03.04 → |
| Dr | José del R. MILLÁN Jose.Millan@idiap.ch | Senior Research Scientist +41 27 721 77 70 | |
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| Mr | Florent MONAY Florent.Monay@idiap.ch | Research Assistant +41 27 721 77 69 | |
| Mr | Darren MOORE Darren.Moore@idiap.ch | Development engineer +41 27 721 77 34 | |
| Dr | Jean-Marc ODOBEZ Jean-Marc.Odobez@idiap.ch | Senior Research Scientist +41 27 721 77 26 | |
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| Dr | Conrad SANDERSON | Research Scientist | → 31.03.04 |
| Mr | Sunil SIVADAS | Research Assistant | → 30.06.04 |
| Mr | Kevin SMITH Kevin.Smith@idiap.ch | Research Assistant +41 27 721 77 67 | |
| Mr | Petr SVOJANOVSY | Research Assistant | 01.01.04 → 31.12.04 |
| Dr | Jithendra VEPA Jithendra.Vepa@idiap.ch | Research Scientist +41 27 721 77 88 | 01.03.04 → |

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| Mr Dong ZHANG Dong.Zhang@idiap.ch | Research Assistant +41 27 721 77 76 | |

1.2 Students

| | | |
|-------------------------|--|---------------------|
| Mr Guillermo ARADILLA | | 01.09.03 → 29.02.04 |
| 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 |

1.3 System and Development Staff

| | | | |
|----|---|--|------------|
| Mr | Sébastien BOURBAN Sebastien.Bourban@idiap.ch | Development engineer +41 27 721 77 58 | 01.07.04 → |
| Mr | Tristan CARRON Tristan.Carron@idiap.ch | System administrator +41 27 721 77 77 | |
| Mr | Thierry COLLADO | Webmaster & development engineer | → 31.05.04 |
| Mr | Norbert CRETTOL Norbert.Crettol@idiap.ch | System administrator +41 27 721 77 25 | |
| Mr | Frank FORMAZ Frank.Formaz@idiap.ch | System manager +41 27 721 77 28 | |
| Mr | Vincent SPANO Vincent.Spano@idiap.ch | Webmaster +41 27 721 77 42 | 01.05.04 → |

1.4 Administrative Staff

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| Dr | Frank CRITTIN Frank.Crittin@idiap.ch | Program Manager +41 27 721 77 17 | 01.03.04 → |
| Ms | Marie-José VILLAR | Public Relations | 01.03.04 → 31.05.04 |
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| Mr | Edward Lee GREGG Ed.Gregg@idiap.ch | Financial assistant +41 27 721 77 54 | |
| Mr | Michel SALAMIN | French teacher | |

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

| PhD Students | | Expected PhD | At IDIAP since | PhD Status | PhD Area | IDIAP Thesis Supervisor(s) | Thesis Director |
|------------------------|---------------|--------------|----------------|------------|----------|-----------------------------|--|
| Ajmera | Jitendra | 2004 | 01.01.01 | Completed | SP | H. Bourlard | Prof. H. Bourlard, EPFL |
| Aradilla Zapata | Guillermo | 2008 | 01.04.04 | 1st year | SP | H. Bourlard | Prof. H. Bourlard, EPFL |
| Ba | Silèye | 2006 | 01.10.02 | 3rd year | VI | J.M. Odobez + S. Bengio | Not decided yet |
| Barnard | Marc | 2005 | 15.03.01 | 4th year | VI,IR | J.M. Odobez + S. Bengio | Prof. H. Bourlard, EPFL |
| Benzeghiba | Mohammed F. | 2005 | 01.08.00 | Submitted | BA | H. Bourlard | Prof. H. Bourlard, EPFL |
| Buttfield | Anna | 2008 | 01.09.04 | 1st year | MI | J. Millan | Not decided yet |
| Cardinaux | Fabien | 2005 | 01.10.01 | 4th year | VI,BA | S. Marcel | Prof. J.-Ph. Thiran, EPFL |
| Chiappa | Silvia | 2005 | 01.11.01 | 4th year | ML,MI | D. Barber | Prof. H. Bourlard, EPFL |
| Collobert | Ronan | 2004 | 01.08.02 | Completed | ML | S. Bengio | Prof. P. Gallinari, Univ. Pierre et Marie Curie, Paris |
| Daddaoua | Nabil | 2008 | 01.11.04 | 1st year | IR | A. Vinciarelli | Not decided yet |
| Dimitrakakis | Christos | 2005 | 01.10.01 | 4th year | ML | S. Bengio | Prof. H. Bourlard, EPFL |
| Ferrez | Pierre | 2008 | 01.02.04 | 1st year | MI | J. Millan | Not decided yet |
| Fousek | Petr | 2008 | 01.01.04 | 1st year | SP | H. Hermansky | Not decided yet |
| Grangier | David | 2007 | 01.10.03 | 2nd year | IR | A. Vinciarelli | Prof. H. Bourlard, EPFL |
| Grezl | Frantisek | 2008 | 01.01.04 | 1st year | SP | H. Hermansky | Not decided yet |
| Ikbal | Shajith | 2004 | 01.05.00 | Completed | SP | H. Bourlard | Prof. H. Bourlard, EPFL |
| Just | Agnès | 2006 | 01.10.02 | 3rd year | VI | S. Marcel + S. Bengio | Prof. H. Bourlard, EPFL |
| Keller | Mikaela | 2006 | 01.12.02 | 3rd year | ML | S. Bengio | Prof. H. Bourlard, EPFL |
| Ketabdar | Hamed | 2008 | 01.09.04 | 1st year | SP | H. Bourlard | Not decided yet |
| Lathoud | Guillaume | 2006 | 01.03.02 | 3rd year | SP | J.M. Odobez + I. McCowan | Prof. H. Bourlard, EPFL |
| Magimai Doss | Mathew | 2004 | 25.10.99 | Submitted | SP | H. Bourlard | Prof. H. Bourlard, EPFL |
| Maier | Viktoria | resigned | 01.09.03 | | | | |
| McGreevy | Michael | 2007 | 15.01.03 | 3rd year | SP | H. Bourlard | Prof. Sridharan, QUT |
| Mesot | Bertrand | 2008 | 01.03.04 | 1st year | ML,SP | D. Barber | Not decided yet |
| Misra | Hemant | 2005 | 24.07.01 | 4th year | SP | H. Bourlard | Prof. H. Bourlard, EPFL |
| Monay | Florent | 2006 | 01.08.02 | 3rd year | VI,IR | D. Gatica-Perez + S. Bengio | Prof. H. Bourlard, EPFL |
| Paiement | Jean-François | 2007 | 01.01.04 | 1st year | ML | S. Bengio | Not decided yet |
| Perrow | Mike | 2008 | 01.12.04 | 1st year | IR | D. Barber | Not decided yet |
| Poh Hoon Thian | Norman | 2006 | 01.08.02 | 3rd year | BA | S. Bengio | Prof. H. Bourlard, EPFL |
| Pozdnoukhov | Alexei | 2006 | 01.01.03 | 3rd year | ML | S. Bengio | Prof. H. Bourlard, EPFL |
| Quelhas | Pedro | 2006 | 01.11.02 | 3rd year | VI,IR | J.M. Odobez + S. Bengio | Prof. H. Bourlard, EPFL |
| Rodriguez | Yann | 2006 | 01.09.02 | 3rd year | VI,BA | S. Marcel + S. Bengio | Prof. H. Bourlard, EPFL |
| Smith | Kevin | 2006 | 21.11.02 | 3rd year | VI | D. Gatica-Perez + S. Bengio | Prof. H. Bourlard, EPFL |
| Wams | Nanne | resigned | 01.10.04 | | | | |
| Zhang | Dong | 2007 | 01.08.03 | 2nd year | VI | D. Gatica-Perez + S. Bengio | Prof. H. Bourlard, EPFL |

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. Goodfrey
- **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: Commission Romande de Mathematique http://www.vsmc.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

Date: September 2004 to February 2005

- **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 Bouchard 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, Phonetica
- 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 Bouchard 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
 - ACM Int. Conf. on Multimedia (MM): 2004.
 - IEEE Int. Conf. on Multimedia and Expo (ICME): 2004, 2005
 - IEEE Int. Conf. on Image Processing (ICIP): 2004, 2005.
 - Joint Workshop on Multimodal Interaction and Related Machine Learning Algorithms (MLMI): 2004.
 - IEEE Int. Workshop on Technology for Education in Developing Countries (TEDC): 2004.

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.
- Co-organizer, Workshop on "Towards Brain Computer Interfacing" at *NIPS 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.

- Program Committee Member: IAPR Int. Conference Pattern Recognition Workshop : Learning for Adaptable Visual Systems, 2004.

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 Genève
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 Summerschool "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
- **Event:** IEEE/RSJ International Conference on Intelligent Robots and Systems. Sendai (Japan).

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 Saarbrücken

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

- [1] J. AJMERA, I. MCCOWAN, AND H. BOURLARD, *Robust speaker change detection*, IEEE Signal Processing Letters (to appear), (2003).
- [2] J. AJMERA, I. MCCOWAN, AND H. BOURLARD, *Speech/music discrimination using entropy and dynamism features in a hmm classification framework*, Speech Communication, 40 (2003), pp. 351–363.
- [3] A. VINCIARELLI, S. BENGIO, AND H. BUNKE, *Offline recognition of unconstrained handwritten texts using HMMs and statistical language models*, IEEE Transactions on Pattern Analysis and Machine Intelligence, 26 (2004), pp. 709–720.
- [4] S. BENGIO, *Multimodal speech processing using asynchronous hidden markov models*, Information Fusion, 5 (2004), pp. 81–89.
- [5] F. CAMASTRA AND A. VINCIARELLI, *Combining Neural Gas and Learning Vector Quantization for cursive character recognition*, Neurocomputing, 51 (2003), pp. 147–159.
- [6] D. CHEN AND J.-M. ODOBEZ, *Video Text Recognition using Sequential Monte Carlo and Error Voting Methods*, accepted for publication in Pattern Recognition Letters, (2005).
- [7] D. CHEN, J.-M. ODOBEZ, AND H. BOURLARD, *Text Detection and Recognition in Images and Videos*, Pattern Recognition, 37 (2004), pp. 595–609.
- [8] D. CHEN, J.-M. ODOBEZ, AND J.-P. THIRAN, *A localization/verification scheme for finding text in images and video frames based on contrast independent features and machine learning methods*, Signal Processing: Image Communication, 19 (2004), pp. 205–217.
- [9] D. CHEN, J.-M. ODOBEZ, AND J.-P. THIRAN, *Monte Carlo Video Text Segmentation*, accepted for publication in Int. Journal Of Pattern Recognition and Artificial Intelligence, (2005).
- [10] R. COLLOBERT, Y. BENGIO, AND S. BENGIO, *Scaling large learning problems with hard parallel mixtures*, International Journal on Pattern Recognition and Artificial Intelligence (IJPRAI), 17 (2003), pp. 349–365.
- [11] CONRAD SANDERSON AND KULDIP K. PALIWAL, *Fast features for face authentication under illumination direction changes*, Pattern Recognition Letters, 24 (2003), pp. 2409–2419.
- [12] CONRAD SANDERSON AND KULDIP K. PALIWAL, *Structurally noise resistant classifier for multi-modal person verification*, Pattern Recognition Letters, 24 (2003), pp. 3089–3099.
- [13] CONRAD SANDERSON AND KULDIP K. PALIWAL, *Identity verification using speech and face information*, Digital Signal Processing, 14 (2004), pp. 449–480.
- [14] F. DE WET, K. WEBER, L. BOVES, B. CRANEN, S. BENGIO, AND H. BOURLARD, *Evaluation of formant-like features for automatic speech recognition*, Journal of the Acoustical Society of America (JASA), 116 (2004), pp. 1781–1792.
- [15] B. FASEL AND J. LUETTIN, *Automatic Facial Expression Analysis: A Survey*, Pattern Recognition, 36 (2003), pp. 259–275.
- [16] D. GATICA-PEREZ, A. LOUI, AND M.-T. SUN, *Finding structure in home videos by probabilistic hierarchical clustering*, IEEE Transactions on Circuits and Systems for Video Technology, 13 (2003), pp. 539–548.

- [17] R. GRAVE DE PERALTA MENENDEZ, S. GONZALEZ ANDINO, L. PEREZ, P. FERREZ, AND J. MILLÁN, *Non-invasive estimation of local field potentials for neuroprosthesis control*, Cognitive Processing, Special Issue on Motor Planning in Humans and Neuroprosthesis Control, (2005).
- [18] I. LAPIDOT AND H. GUTERMAN, *Dichotomy between clustering performance and minimum distortion in piecewise-dependent-data (PDD) clustering*, to be published in IEEE Signal Processing Letters, (2003).
- [19] I. MCCOWAN AND H. BOURLARD, *Microphone array post-filter based on noise field coherence*, IEEE Transactions on Speech and Audio Processing, 11 (2003), pp. 709–716.
- [20] I. MCCOWAN, D. GATICA-PEREZ, S. BENGIO, G. LATHOUD, M. BARNARD, AND D. ZHANG, *Automatic analysis of multimodal group actions in meetings*, IEEE Transactions on Pattern Analysis and Machine Intelligence (to appear), (2004).
- [21] J. MILLÁN, *Adaptive brain interfaces*, Communications of the ACM, 46 (2003).
- [22] J. MILLÁN, *Interfaces cerebrales*, Mente y Cerebro, (2005).
- [23] J. MILLÁN AND J. MOURIÑO, *Asynchronous BCI and local neural classifiers: An overview of the Adaptive Brain Interface project*, IEEE Trans. on Neural Systems and Rehabilitation Engineering, Special Issue on Brain-Computer Interface Technology, (2003).
- [24] J. MILLÁN, F. RENKENS, J. MOURIÑO, AND W. GERSTNER, *Brain-actuated interaction*, Artificial Intelligence, (2004).
- [25] J. MILLÁN, F. RENKENS, J. MOURIÑO, AND W. GERSTNER, *Non-invasive brain-actuated control of a mobile robot by human EEG*, IEEE Trans. on Biomedical Engineering, Special Issue on Brain-Machine Interfaces, (2004).
- [26] N. POH AND S. BENGIO, *How do correlation and variance of base-experts affect fusion in biometric authentication tasks?*, IEEE Trans. on Signal Processing, (2005).
- [27] P. PUJOL, S. POL, C. NADEU, A. HAGEN, AND H. BOURLARD, *Comparison and Combination of Features in a Hybrid hmm/mlp and a hmm/gmm Speech Recognition System*, to be published in IEEE Transactions on Speech and Audio Processing, (2003).
- [28] T. A. STEPHENSON, M. MAGIMAI-DOSS, AND H. BOURLARD, *Speech recognition with auxiliary information*, IEEE Trans. on Speech and Audio Processing, 4 (2004), pp. 189–203.
- [29] K. WEBER, S. IKBAL, S. BENGIO, AND H. BOURLARD, *Robust Speech Recognition and Feature Extraction Using HMM2*, Computer Speech & Language, 17 (2003), pp. 195–211.

4.2 Articles in Conference Proceedings

- [1] J. AJMERA, G. LATHOUD, AND I. MCCOWAN, *Clustering and segmenting speakers and their locations in meetings*, in ICASSP, 2004.
- [2] J. AJMERA, I. MCCOWAN, AND H. BOURLARD, *An online audio indexing system*, 2004.
- [3] J. AJMERA AND C. WOOTERS, *A robust speaker clustering algorithm*, in IEEE Automatic Speech Recognition Understanding Workshop, 2003.
- [4] M. ATHINEOS, H. HERMANISKY, AND D. P. ELLIS, *Lp-trap: Linear predictive temporal patterns*, 2004.
- [5] M. ATHINEOS, H. HERMANISKY, AND D. P. ELLIS, *Plp²: Autoregressive modeling of auditory-like 2-d spectro-temporal patterns*, 2004.
- [6] S. BA AND J.-M. ODOBEZ, *A probabilistic framework for joint head tracking and pose estimation*, in 17th Int. Conf. Pattern Recognition (ICPR), vol. 4, Cambridge, UK, Aug. 2004.

- [7] E. BAILLY-BAILLIÈRE, S. BENGIO, F. BIMBOT, M. HAMOUZ, J. KITTLER, J. MARIÉTHOZ, J. MATAS, K. MESSER, V. POPOVICI, F. PORÉE, B. RUIZ, AND J.-P. THIRAN, *The BANCA database and evaluation protocol*, in 4th International Conference on Audio- and Video-Based Biometric Person Authentication, AVBPA, Springer-Verlag, 2003.
- [8] M. BARNARD AND J.-M. ODOBEZ, *Robust playfield segmentation using map adaptation*, in Proc. 17th International Conference on Pattern Recognition (ICPR 2004), Cambridge, United Kingdom, August 2004.
- [9] M. BARNARD, J.-M. ODOBEZ, AND S. BENGIO, *Multi-modal audio-visual event recognition for football analysis*, in Proc. IEEE Workshop on Neural Networks for Signal Processing (NNSP), Toulouse, France, September 2003.
- [10] S. BENGIO, *An asynchronous hidden markov model for audio-visual speech recognition*, in Advances in Neural Information Processing Systems, NIPS 15, S. Becker, S. Thrun, and K. Obermayer, eds., Vancouver, Canada, 2003, MIT Press.
- [11] S. BENGIO, *Multimodal authentication using asynchronous HMMs*, in 4th International Conference on Audio- and Video-Based Biometric Person Authentication, AVBPA, Springer-Verlag, 2003.
- [12] S. BENGIO AND J. MARIÉTHOZ, *The expected performance curve: a new assessment measure for person authentication*, in Proceedings of Odyssey 2004: The Speaker and Language Recognition Workshop, 2004.
- [13] S. BENGIO AND J. MARIÉTHOZ, *A statistical significance test for person authentication*, in Proceedings of Odyssey 2004: The Speaker and Language Recognition Workshop, 2004.
- [14] M. F. BENZEGHIBA AND H. BOURLARD, *Hybrid HMM/ANN and GMM Combination for User-Customized Password Speaker Verification*, in Proceedings of the 2003 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP-03), 2003.
- [15] M. F. BENZEGHIBA AND H. BOURLARD, *On the Combination of Speech and Speaker Recognition*, in European Conference On Speech, Communication and Technology (EUROSPEECH'03), Geneva, Switzerland, 2003, pp. 1361–1364.
- [16] M. F. BENZEGHIBA AND H. BOURLARD, *Confidence Measures in Multiple pronunciations Modeling For Speaker Verification*, in Proceedings of the 2004 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP-04), 2004.
- [17] F. CARDINAUX, C. SANDERSON, AND S. MARCEL, *Comparison of MLP and GMM classifiers for face verification on XM2VTS*, in 4th International Conference on AUDIO- and VIDEO-BASED BIOMETRIC PERSON AUTHENTICATION, no. 10, University of Surrey, Guildford, UK, June 9-11 2003.
- [18] D. CHEN AND J.-M. ODOBEZ, *Sequential Monte Carlo Video Text Segmentation*, in ICIP, Sep. 2003.
- [19] S. CHIAPPA AND S. BENGIO, *Hmm and iohmm modeling of eeg rhythms for asynchronous bci systems*, in European Symposium on Artificial Neural Networks ESANN, 2004.
- [20] F. CINCOTTI, A. SCIPIONE, A. TINIPERI, M. M. D. MATTIA, J. MILLÁN, S. SALINARI, L. BIANCHI, AND F. BABILONI, *Comparison of different feature classifiers for brain computer interfaces*, in Proceedings of the 1st International IEEE EMBS Conference on Neural Engineering, Capri, Italy, March 2003.
- [21] R. COLLOBERT AND S. BENGIO, *A gentle hessian for efficient gradient descent*, in IEEE International Conference on Acoustic, Speech, and Signal Processing, ICASSP, 2004.
- [22] R. COLLOBERT AND S. BENGIO, *Links between perceptrons, MLPs and SVMs*, in International Conference on Machine Learning, ICML, 2004.
- [23] CONRAD SANDERSON AND KULDIP K. PALIWAL, *Noise Resistant Audio-Visual Verification via Structural Constraints*, in Proceedings of the 2003 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP-03), Hong Kong, April 2003.
- [24] CONRAD SANDERSON AND SAMY BENGIO, *Augmenting Frontal Face Models for Non-Frontal Verification*, in Proceedings of the 2003 Workshop on Multimodal User Authentication (MMUA'03), Santa Barbara, California, December 2003.

- [25] CONRAD SANDERSON AND SAMY BENGIO, *Robust Features for Frontal Face Authentication in Difficult Image Conditions*, in Proceedings of 4th International Conference on Audio- and Video-based Biometric Person Authentication (AVBPA-03), University of Surrey, Guildford, United Kingdom, June 2003.
- [26] CONRAD SANDERSON AND SAMY BENGIO, *Statistical Transformations of Frontal Models for Non-Frontal Face Verification*, in Proceedings of the IEEE International Conference on Image Processing (ICIP), Singapore, October 2004.
- [27] J. CZYZ, S. BENGIO, C. MARCEL, AND L. VANDENDORPE, *Scalability analysis of audio-visual person identity verification*, in 4th International Conference on Audio- and Video-Based Biometric Person Authentication, AVBPA, Springer-Verlag, 2003.
- [28] C. DIMITRAKAKIS AND S. BENGIO, *Boosting hmms with an application to speech recognition*, in IEEE International Conference on Acoustic, Speech, and Signal Processing, ICASSP, 2004.
- [29] C. DIMITRAKAKIS AND S. BENGIO, *Online policy adaptation for ensemble classifiers*, in 12th European Symposium on Artificial Neural Networks, ESANN 04, 2004.
- [30] C. DIMITRAKAKIS AND S. BENGIO, *Boosting word error rates*, in IEEE International Conference on Acoustic, Speech, and Signal Processing, ICASSP, 2005.
- [31] S. B. I. M. DONG ZHANG, DANIEL GATICA-PEREZ AND G. LATHOUD, *Multimodal Group Action Clustering in Meetings*, in ACM 2nd International Workshop on Video Surveillance & Sensor Networks in conjunction with 12th ACM International Conference on Multimedia, 2004.
- [32] FABIEN CARDINAUX, CONRAD SANDERSON, AND SAMY BENGIO, *Face Verification Using Adapted Generative Models*, in The 6th International Conference on Automatic Face and Gesture Recognition, FG2004, Seoul, Korea, 2004, IEEE.
- [33] P. FOUSEK, P. SVOJANOVSKY, F. GREZL, AND H. HERMANSKY, *New nonsense syllables database – analyses and preliminary asr experiments*, in Proceedings of International Conference on Spoken Language Processing (ICSLP), October 2004.
- [34] D. GATICA-PEREZ, G. LATHOUD, I. MCCOWAN, AND J.-M. ODOBEZ, *A mixed-state i-particle filter for multi-camera speaker tracking*, in IEEE Int. Conf. on Computer Vision Workshop on Multimedia Technologies for E-Learning and Collaboration (ICCV-WOMTEC), 2003.
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- [42] H. HERMANSKY, *TRAP-TANDEM: Data-driven extraction of temporal features from speech*, in large part published in Proceedings of ASRU-2003, no. 50, Martigny, Switzerland, 2003.
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