



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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Dr Pierre WELLNER Pierre.Wellner@idiap.ch	Senior Research Scientist +41 27 721 77 62	
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

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Mr	Thierry COLLADO	Webmaster & development engineer	→ 31.05.04
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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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Mr	Pierre DAL PONT Pierre.DalPont@idiap.ch	Financial Manager +41 27 721 77 45	
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Dr	Frank CRITTIN Frank.Crittin@idiap.ch	Program Manager +41 27 721 77 17	01.03.04 →
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Ms	Céline AYMON Celine.Aymon@idiap.ch	Public Relations +41 27 721 77 15	01.07.04 →
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Mrs	Nadine ROUSSEAU Nadine.Rousseau@idiap.ch	Secretary +41 27 721 77 22	
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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. Vanderghenst, 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.vsmf.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 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, 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 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
 - 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

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- [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.
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- [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.
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- [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).
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- [22] J. MILLÁN, *Interfaces cerebrales*, Mente y Cerebro, (2005).
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- [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).
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4.2 Articles in Conference Proceedings

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- [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.
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- [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.
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- [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.
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- [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.
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- [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.
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