

## Sébastien Marcel

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Rue Marconi 19  
1920 Martigny, Switzerland  
+41 27 721 77 27  
sebastien.marcel@idiap.ch

<b>EDUCATION</b>	<i>Ph.D.</i> , Signal Processing and Telecommunications Université de Rennes I, Rennes, France	2000
	<i>Master of Research</i> , Artificial Intelligence Université Paul Sabatier, Toulouse, France	1996
<b>EXPERIENCE</b>	<i>Senior researcher</i> Idiap research institute (Switzerland) <ul style="list-style-type: none"><li>• Research on biometric person recognition,</li><li>• Supervision of a team of 5 PhD students and 1 PostDoc,</li><li>• Main investigator and coordinator of the FP7 MOBIO project,</li><li>• Co-investigator and supervisor at Idiap of the Marie-Curie ITN Bayesian Biometrics for Forensics (BBfor2) project,</li><li>• Involved in the NCCR IM2 and the FP6 AMIDA projects.</li></ul>	since 2008
	<i>Visiting Associate Professor</i> University of Cagliari (Italy) <ul style="list-style-type: none"><li>• Short courses on face recognition,</li><li>• Research at the Pattern Recognition and Applications Group of Prof Fabio Roli in the Department of Electrical and Electronic Engineering.</li></ul>	Jan-Feb 2010
	<i>Research scientist</i> IDIAP research institute (Switzerland) <ul style="list-style-type: none"><li>• Research on biometric person recognition,</li><li>• Supervision of several PhD students,</li><li>• Management of various industrial projects,</li><li>• Involved in the NCCR IM2 and the FP6 AMI projects.</li></ul>	2004-2007
	<i>Post Doc</i> IDIAP research institute (Switzerland) <ul style="list-style-type: none"><li>• Research on face and gesture recognition,</li><li>• Supervision of 1 PhD student,</li><li>• Management of 1 industrial project,</li><li>• Involved in various EU projects (BANCA, ASSAVID, FG-NET).</li></ul>	2001-2003
	<i>Engineer Research &amp; Development</i> France Telecom Research & Development (France) <ul style="list-style-type: none"><li>• Research on vision-based hand gesture recognition for Human-Computer Interfaces,</li><li>• Involved in the development of innovative user-centric interfaces.</li></ul>	1997-2000

## PROJECTS

### *Ongoing Projects as Principal Investigator*

- REPLAY (CH TheArk) – “Face authentication robust to replay attacks” 2010
- MOBIO (EU FP7) – ICT “Mobile Biometry” 2008-2010
- MULTI 1110 (CH SNSF) – “Novel Audio-Visual features and early-fusion techniques for Biometric Authentication” 2007-2011
- MULTI 1105 (CH SNSF) – “Sharing of Visual Binary Features for Multi-view Face Detection” 2007-2011

### *Ongoing Projects with Major Involvement*

- BBfor2 (EU FP7) – Marie Curie ITN “Bayesian Biometrics for Forensics” 2010-2013
- IM2 (CH NCCR) – “Interactive Multimodal Information Management” 2002-2009
- AMIDA (EU FP6) – “Augmented Multi-party Interaction” 2006-2009

### *Former Projects as Principal Investigator*

- GMface (CH SNSF) – “Graphical Models for face authentication” 2004-2008
- AVISION (CH CTI) – “Advanced Videoconferencing Service over IP-cOnverging Networks” 2008
- MultiFace (CH TheArk) – “Multiple and Multi-view Face Detection for video conferencing applications” 2006
- BioSign (France Telecom) – “Biometric Signature” 2004
- BioLogin (CH TheArk) – “Bi-Modal Face and Speaker Authentication” 2003
- GHOST (France Telecom) – “Gesturing Hand recognition baSed on user Tracking” 2001-2005

### *Former Projects with Major Involvement*

- COST275 (EU FP5) – “Biometrics-Based Recognition of People over the Internet” 2002-2005
- FG-NET (EU FP5) – “Face and Gesture Recognition Working Group” 2001-2004
- BANCA (EU FP5) – “Biometric Access Control for Networked and e-Commerce Applications” 2000-2003
- ASSAVID (EU FP5) – “Automatic Segmentation and Semantic Annotation of Sports Videos” 2000-2002
- CIMWOS (EU FP5) – “Combined IMages and WOrd Spotting” 2000-2002

## ACADEMIC ACTIVITIES

### *Research team supervised:*

- Christopher Mc Cool (Post-Doc) March 2008 –
- Anindya Roy (EPFL PhD Student) August 2007 –
- Venkatesh Bala Subburaman (EPFL PhD Student) September 2007 –
- Constantin Cosmin Atanaseoi (EPFL PhD Student) May 2008 –
- Niklas Johansson (EPFL PhD Student) September 2008 –
- Laurent El Shafey (EPFL PhD Student) January 2010 –

### *Graduated students supervised:*

- Guillaume Heusch (EPFL PhD Student) 2009
- Agnes Just (EPFL PhD Student) 2006
- Yann Rodriguez (EPFL PhD Student) 2006
- Fabien Cardinaux (EPFL PhD Student) 2005

- Simon Jacquier (Master EPFL) 2008
- Jean Keomany (Master EPFL) 2006
- Tiffany Sauquet (Master EURECOM) 2005

*PhD thesis jury member:*

- Guillaume Heusch (EPFL - Switzerland) 2009
- Timo Ahonen (University of Oulu - Finland) 2009
- Anthony Larcher (University of Avignon - France) 2009
- Alexandre Preti (University of Avignon - France) 2008
- Agnes Just (EPFL - Switzerland) 2006
- Yann Rodriguez (EPFL - Switzerland) 2006
- Fabien Cardinaux (EPFL - Switzerland) 2005

*Visiting and Teaching*

- **Visiting Professor**, University of Cagliari, Italy, January 18 to February 1, 2010
- **Teaching** “Biometric Person Recognition” **at EPFL** in the Electrical Engineering Doctoral (EDEE) program 2009-2010 (Spring semester)

*Invited Talks*

- “Mobile Biometry”, ACTIBIO Workshop, INFOSECURITY Europe, London, April 2009
- “A tutorial on face detection and recognition”, Gjovik University, Norway, June 2008
- “Face Detection and Recognition using Machine Learning”, Collge Scientifique de France Telecom R&D – Orange Labs, January 2007
- “Torchvision: the machine vision package of Torch”, Summer School on Multimodal Information Retrieval, France, September 2007
- “A tutorial on face recognition”, University of Fribourg, June 2007
- “A tutorial on face detection and recognition”, IM2 Winter Institute, February 2007

*Organizing and Program Committee of International Conferences:*

- Co-organizer, MOBIO Face and Speaker Verification Evaluation, International Conference on Pattern Recognition (ICPR) Contest, 2010,
- Guest Editor, Special Issue on “Image and Video Retrieval: Theory and Applications”, Springer Multimedia Tools and Applications (2010),
- Practitioner Chair, ACM International Conference on Image and Video Retrieval (CIVR 2009),
- Program Committee, IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2008),
- Program Committee, IEEE Conference on Computer Vision and Pattern Recognition (CVPR 2005),
- Organising and Program Committee, IEEE ICPR Workshop on the Visual Observation of Diectic Gestures (POINTING 2004),
- Technical Program Committee, IEEE International Conference on Image Processing (ICIP 2003),
- Program Committee, IEEE International Workshop on Performance Evaluation of Tracking and Surveillance (PETS 2002).

*Reviewer for International Journals and Conferences:*

- IEEE Transactions on Pattern Analysis and Machine Intelligence,

- Computer Vision and Image Understanding,
- Pattern Recognition Letters,
- Signal Processing,
- EURASIP Journal on Applied Signal Processing.
- International Conference on Image Processing (ICIP),
- International Conference on Pattern Recognition (ICPR),
- International Conference on Computer Vision and Pattern Recognition (CVPR),
- European Conference on Computer Vision (ECCV).

*On-line Resources:*

Torchvision open source machine vision library, Tutorial and associated labs on face recognition.

*Demonstration systems:*

Google Portrait, BananaScreen (more than 400'000 downloads), Online Face Detector, BioLogin.

**COMPUTER SKILLS**

*Languages & Software:* C, C++, C-shell, Python, Perl, Matlab.

*Operating Systems:* Unix, Linux, MacOS, Windows.

**TECHNOLOGY TRANSFER**

*Face detection:* A face detection technology has been transferred to IdeArk SA which distributes the “FaceOnIt” library.

*Face recognition:* A face recognition technology has been licensed to KeyLemon SA to offer simple, fast and convenient computer access solutions based on face recognition.

**AWARDS**

*SNSF picture of the month for september 2007:*

SNSF selected Sébastien Marcel’s Google Portrait demonstration to illustrate the work of research scientists in the IM2 National Centre of Competence in Research.

*IMD Start-up Competition:*

“BioLogin” was also among the winners of the 9th annual IMD Start-Up Competition. The International Institute of Management Development (IMD) have chosen the “BioLogin” project to work with its MBA and EMBA programs in 2007.

*Finalist of the Swiss Technology Award:*

The technology developed during the “BioLogin” project has been invited by OSEC (Swiss Office for Commercial Expansion) to be demonstrated as part of the Swiss Pavillon at the CeBIT in Hannover, March 9-15, 2006.

**PRESS**

*Le Temps, October 1 2007*

“Une équipe de chercheurs basée à Martigny améliore la recherche d’images sur Google”.

*Le Temps, April 11 2006*

“Un chercheur lève le voile sur ses logiciels qui allient reconnaissance faciale et vocale”.

**RECENT PUBLICATIONS (since 2006)**

*Impact factor on Nov 12 2009:* H-INDEX: 14, G-INDEX: 24

## JOURNALS

- [1] J. Galbally, C. McCool, J. Fierrez, S. Marcel, and J. Ortega-Garcia. On the vulnerability of face verification systems to hill-climbing attacks. *Pattern Recognition*, 43(3):1027–1038, 2010.
- [2] G. Heusch and S. Marcel. **A Novel Statistical Generative Model Dedicated To Face Recognition**. *Image and Vision Computing*, 28(1):101–110, 2010.
- [3] A. Just and S. Marcel. A comparative study of two state-of-the-art sequence processing techniques for hand gesture recognition. *Computer Vision and Image Understanding*, 113(4):532–543, April 2009.
- [4] S. Marcel and J.d.R. Millán. Person authentication using brainwaves (EEG) and maximum a posteriori model adaptation. *IEEE Transactions on Pattern Analysis and Machine Intelligence - Special Issue on Biometrics*, 29(4):743–748, April 2007.

## CONFERENCES

- [5] A. Roy and S. Marcel. Boosted binary features for noise-robust speaker verification. In *IEEE International Conference on Acoustics, Speech, and Signal Processing*, 2010. (to appear).
- [6] A. Roy and S. Marcel. Visual processing-inspired fern-audio features for noise-robust speaker verification. In *ACM 25th Symposium on Applied Computing, 2010, Sierre, Switzerland*. Association for Computing Machinery, 2010. (to appear).
- [7] V. Subburaman and S. Marcel. An alternative scanning strategy to detect faces. In *IEEE International Conference on Acoustics, Speech, and Signal Processing*, 2010. (to appear).
- [8] J. Galbally, C. McCool, J. Fierrez, S. Marcel, and J. Ortega-Garcia. Hill-climbing attack to an eigenface-based face verification system. In *Proceedings of the International Conference on Biometrics, Identity and Security (BIDS)*, 2009. (to appear).
- [9] G. Heusch and S. Marcel. **Bayesian Networks to Combine Intensity and Color Information in Face Recognition**. In *IEEE IAPR International Conference on Biometrics (ICB)*, 2009.
- [10] S. Marcel, R. van Zwol, R. Baeza-Yates, O. Heckmann, J.E. Solem, J. Oomen, H. van Gageldonk, J-P. Gehrig, X. Vives, and B. Sumengen. Media on the web, in post-production and broadcasting. In *ACM Intl. Conf. On Image and Video Retrieval (CIVR)*, 2009. (to appear).
- [11] C. McCool and S. Marcel. **Parts-Based Face Verification using Local Frequency Bands**. In *IEEE IAPR International Conference on Biometrics (ICB)*, 2009.
- [12] A. Roy and S. Marcel. **Haar Local Binary Pattern Feature for Fast Illumination Invariant Face Detection**. In *Proceedings of the British Machine Vision Conference (BMVC)*, 2009. (to appear).
- [13] G. Heusch and S. Marcel. **Face Authentication with Salient Local Features and Static Bayesian Network**. In *IEEE IAPR International Conference on Biometrics (ICB)*, 2007.
- [14] S. Marcel. Joint bi-modal face and speaker authentication using explicit polynomial expansion. In *Proceedings of the Workshop on Multimodal Interaction and Related Machine Learning Algorithms (MLMI)*, 2007.

- [15] G. Heusch, Y. Rodriguez, and S. Marcel. **Local Binary Patterns as an Image Preprocessing for Face Authentication.** In *IEEE International Conference on Automatic Face and Gesture Recognition (AFGR)*, 2006.
- [16] A. Just, Y. Rodriguez, and S. Marcel. Hand posture classification and recognition using the modified census transform. In *IEEE International Conference on Automatic Face and Gesture Recognition (AFGR)*, 2006.
- [17] K. Messer, J. Kittler, J. Short, G. Heusch, F. Cardinaux, S. Marcel, Y. Rodriguez, and al. Performance characterization of face recognition algorithms and their sensitivity to severe illumination changes. In *International Conference on Biometrics (ICB)*, 2006.
- [18] Y. Rodriguez and S. Marcel. **Face Authentication Using Adapted Local Binary Pattern Histograms.** In *9th European Conference on Computer Vision (ECCV)*, 2006.