

## Sébastien Marcel

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**NATIONALITY** Swiss and French

**DATE OF BIRTH** 23<sup>th</sup> of July 1973

**CONTACT INFORMATION** Idiap Research Institute *Phone:* +41 27 721 77 27  
Rue Marconi 19 *Fax:* +41 27 721 77 12  
1920 Martigny *Email:* marcel@idiap.ch  
Switzerland *WWW:* <http://www.idiap.ch/~marcel>

**EDUCATION** **Ph.D.**, Signal Processing and Telecommunications 2000  
Université de Rennes I, Rennes, France

**M.A.S.**, Artificial Intelligence 1996  
Université Paul Sabatier, Toulouse, France

**EMPLOYMENT HISTORY** Senior Member of the Research Staff since 2010  
Head of the Biometric Security group Idiap Research Institute

Scientific Head of Programme CAS Biometrics and Privacy 2017  
Distance University (Switzerland)

Visiting Associate Professor Jan-Feb 2010  
University of Cagliari (Italy)

Research scientist 2001-2009  
Idiap Research Institute (Switzerland)

R&D Engineer 1997-2000  
Orange Labs (France)

**RESEARCH INTERESTS** Biometrics security (spoofing and anti-spoofing, face, speech, vein, EEG), Image Processing, Machine Learning.

**SCIENTIFIC ACHIEVEMENTS**

- Biometric Spoofing and Anti-Spoofing
- Brainwave Biometrics
- Distribution modeling and session variability modeling for part-based face recognition

**DIPLOMA AND DOCTORAL STUDENTS** *PhD students (supervised/co-supervised students marked with a \*/+):*

1. Tiago Peireira \* (EPFL PhD Student) Jul 2014 –
2. Hannah Muckenhirn + (EPFL PhD Student) Jul 2015 –
3. Amir Mohammadi \* (EPFL PhD Student) Feb 2016 –
4. Matthias Vanoni \* (EPFL PhD Student) Sep 2013 – Dec 2014
5. Ivana Chingovksa \* (EPFL - Switzerland) 2015
6. Laurent El Shafey \* (EPFL - Switzerland) 2014
7. Constantin Cosmin Atanasoaei \* (EPFL - Switzerland) 2012
8. Venkatesh Bala Subburaman \* (EPFL - Switzerland) 2012
9. Anindya Roy \* (EPFL - Switzerland) 2011
10. Guillaume Heusch \* (EPFL - Switzerland) 2009
11. Agnes Just \* (EPFL - Switzerland) 2006
12. Yann Rodriguez \* (EPFL - Switzerland) 2006
13. Fabien Cardinaux \* (EPFL - Switzerland) 2005

*PhD jury member:*

- Christian Galea (University of Malta) 2017
- Anil Yuce (EPFL - Switzerland) 2015

• Baptiste Chu (EC Lyon - France)	2015
• Abhijit Bendale (Colorado State University - USA)	2015
• Yong Wong (The University of Queensland - Australia)	2012
• Anil Kumar Sao (IIIT Hyderabad - India)	2010
• Timo Ahonen (University of Oulu - Finland)	2009
• Anthony Larcher (University of Avignon - France)	2009
• Alexandre Preti (University of Avignon - France)	2008

*Master students and Visitors:*

• Artur Costa-Pazo (Eng – GRADIANT)	2015
• David Yambay (PhD student – Clarkson University)	2014
• Abhijit Bendale (PhD student – Colorado State University)	2014
• Rakesh Metha (PhD student – Tampere University of Technology)	2013
• Abhishek Dutta (PhD student – University Twente)	2013
• Tauseef Ali (PhD student – University Twente)	2013
• Jukka Komulainen (PhD student – University of Oulu)	2013
• M.I. Mandasari (PhD student – Radboud University Nijmegen)	2012
• T.d.F. Pereira (Master student – University of Campinas)	2012
• Dr Javier Galbally (Post-Doc student – Universidad Autónoma de Madrid)	2012
• Dr Mitch McLaren (Post-Doc student – Radboud University Nijmegen)	2011
• Fen Zheng (EPFL Master student)	2011
• Javier Galbally (PhD student – Universidad Autónoma de Madrid)	2009
• Simon Jacquier (EPFL Master student)	2008
• Anh-Thu Nguyen (EPFL Master student)	2007
• Jean Keomany (EPFL Master student)	2006
• Tiffany Sauquet (EURECOM Master student)	2005

**PROJECT FUNDING**

Total secured funding: €8'500'000	PI marked with a *
• ALLIES (CHIST-ERA) – “Autonomous Lifelong learnIng intelLigent Systems” (500'000 CHF) 2018-2020	
• BATL (US IARPA) – “Biometric Authentication with Timeless Learner” (800'000 CHF) 2016-2018	
• SAVI (US DARPA) – “Spotting Audio-Visual Inconsistencies” (380'000 CHF)	2017-2018
• Swiss Center for Biometrics Research and Testing* (Swiss Valais) – (500'000 CHF)	2016
• FARGO* (CH CTI) – “Convenient and Secure 3D Face Recognition based on RGB-D Cameras” (150'000 CHF)	2016-2017
• BIOWAVE (CH CTI) – “BIOmetric Watch Activated by VEins” (200'000 CHF)	2016-2017
• 3DFingerVein (CH CTI) – “3D FingerVein Biometrics” (200'000 CHF)	2016-2017
• ODESSA (ANR/SNSF) – “Online Diarization Enhanced by recent Speaker identification and Sequential learning Approaches” (350'000 CHF)	2016-2019
• UniTS (CH SNSF) – “Unified Speech Processing Framework for Trustworthy Speaker Recognition” (150'000 CHF)	2015-2018
• SWAN (NO INKPLUSS) – “Secure Access Control over Wide Area Network” (358'208 CHF)	2016-2019
• TeSLA (EU H2020) – “An Adaptive Trust-based e-assessment System for Learning” (642'974 CHF)	2016-2018
• Google* – “Mobile Anti-Spoofing” (\$ 235'000)	2015-2016
• Google ATAP* – “Mobile Biometrics” (\$ 100'000)	2015
• HFACE* (CH SNSF) – “Heterogeneous Face Recognition” (150'000 CHF)	2014-2017
• COHFACE* (CH SNSF) – “COntactless Heartbeat detection for trustworthy FACE Biometrics” (50'000 CHF)	2014-2015
• <a href="#">Swiss Center for Biometrics Research and Testing*</a> (Swiss Valais) – (300'000 CHF)	2014
• EMMA1* (Industrial) – “Emotion Marker Analysis” (€ 236'000)	2014-2015
• LOBI* (CH SNSF) – “Low Complexity Binary Features for Robust-to-Noise Speaker Recognition” (235'000 CHF)	2012-2014
• <a href="#">BEAT</a> (EU FP7)* – SECURITY “Biometrics Evaluation and Testing” (€ 959'000)	2012-2016

- **TABULA RASA** \* (EU FP7) – ICT “Trusted Biometrics under Spoofing Attacks” (€982'000) 2010-2014
- **CONTEXT** \* (CH Hasler) – “Context Modeling for Object Detection” (50'000 CHF) 2011
- **BBfor2** (EU FP7) – Marie Curie ITN “Bayesian Biometrics for Forensics” (€321'000) 2010-2013
- **MOBIO** \* (EU FP7) – ICT “Mobile Biometry” (€725'000) 2008-2010
- **REPLAY** \* (CH CTI) – “Face authentication robust to replay attacks” (145'000 CHF) 2010
- **MULTI 1110** \* (CH SNSF) – “Joint Bi-Modal Person Authentication” (150'000 CHF) 2007-2011
- **MULTI 1105** \* (CH SNSF) – “Multi-view Face Detection” (150'000 CHF) 2007-2011
- **GMface** \* (CH SNSF) – “Graphical Models for face authentication” (150'000 CHF) 2004-2008
- **BioSign** \* (France Telecom) – “Biometric Signature” (€100'000) 2004
- **GHOST** \* (France Telecom) – “Gesturing Hand recognition based on user Tracking” (€126'000) 2001-2005

## RESEARCH TEAM

- Tiago Peireira (EPFL PhD Student) Jul 2014 –
- Hannah Muckenhirn (EPFL PhD Student) Jul 2015 –
- Amir Mohammadi (EPFL PhD Student) Feb 2016 –
- Dr Anjith George (Post-Doc) Oct 2017 –
- Dr David Geissbühler (Post-Doc) Jul 2017 –
- Dr Alain Komaty (Post-Doc) May 2016 –
- Dr Olegs Nikisin (Post-Doc) Mar 2016 –
- Dr Pavel Korshunov (Research Associate) Jul 2015 –
- Dr Sushil Bhattacharjee (Research Associate) Jul 2015 –
- Dr Guillaume Heusch (Research Associate) Jun 2015 –
- Dr André Anjos (Research Associate) Jun 2010 –

## TEACHING

### Lectures

- (*under preparation*) “Biometrics”, **UNIL** and **EPFL** Master course in Fall 2018
- “Fundamentals in Statistical Pattern Recognition”, **EPFL** Electrical Engineering Doctoral (EDEE) program in Spring 2013 (11), 2015 (20) and 2017 (29)
- “Biometrics: Introduction and Applications”, CAS Biometrics and Privacy (UniDistance), Apr 2017
- “Spoofing and Anti-Spoofing in Biometrics”, International Master in Biometrics (Paris), Jan 2016
- “Spoofing and Anti-Spoofing in Biometrics”, **Visiting researcher**, Multimedia University (MMU), Malaysia, January 2015
- “Face Recognition” **Visiting Professor**, University of Cagliari, Italy, January 18 to February 1, 2010

### Keynotes and Tutorials

- Tutorial “Biometric Spoofing and Anti-Spoofing”, IEEE International Workshop on Information Forensics and Security, Dec 2017
- Tutorial “Spoofing and Anti-Spoofing in Biometrics”, IEEE Winter School on Security and Privacy in Biometrics, Jan 2017
- Keynote “Reproducible Research in Biometrics: moving to the BEAT”, IEEE International Conference on Biometrics (ICB), June 2015
- Tutorial “Spoofing and Anti-Spoofing in Biometrics: lessons learned from the TABULA RASA project”, IEEE International Conference on Biometrics (ICB), June 2015
- Tutorial “Spoofing and Anti-Spoofing in Biometrics: lessons learned from the TABULA RASA project”, IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS), Sep 29 2013
- Keynote “On the importance of benchmarking in facial image analysis”, IEEE ECCV International Workshop on Benchmarking Facial Image Analysis Technologies (BeFIT 2012), Firenze, Oct 2012

## AWARDS

- IET Biometrics Premium Awards 2015
- IEEE/IAPR Best Paper Award – International Joint Conference on Biometrics 2014
- IEEE Best Scientific Paper Award – International Conference on Pattern Recognition 2010
- Best Paper Award – European Conference on Computer Vision WS 2010

## PROFESSIONAL MEMBERSHIPS AND SERVICES

*Memberships:* IEEE, SPS, European Association for Biometrics and ISO SC37

*Committees:*

- Executive Committee: **VP Conferences, IEEE Biometrics Council**, 2017–,
- Program Committee: 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), International Joint Conference on Biometrics (IJCB), International Conference on Biometrics (ICB).
- Doctoral Consortium Chair: IEEE International Conference on Biometrics Theory, Applications, and Systems (BTAS)
- Competition Chair: International Conference on Biometrics (ICB), Face and Gesture Conference (FG)
- Area Chair: International Joint Conference on Biometrics (IJCB)

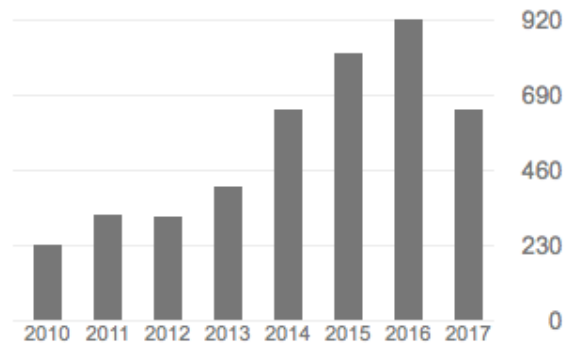
*Editorial Boards:*

- **Co-Editor**, Springer **Handbook of Biometric Anti-Spoofing** (Ed 2) 2018
- **Associate Editor**, **IEEE Signal Processing Letters** 2017–
- Associate Editor, **IEEE Transactions on Information Forensics and Security** 2013–2016
- Guest Editor, **IEEE Signal Processing Magazine** Special Issue on Biometric Security and Privacy 2015
- Guest Editor, **IEEE Transactions on Information Forensics and Security** Special Issue on Biometric Spoofing and Countermeasures 2014
- **Co-Editor**, Springer **Handbook of Biometric Anti-Spoofing** (Ed 1) 2014

## REFERENCES

1. **Prof Anil Jain**,  
Department of Computer Science & Engineering, **Michigan State University** (USA)  
[jain@cse.msu.edu](mailto:jain@cse.msu.edu) <https://www.cse.msu.edu/~jain>
2. **Prof Josef Kittler**,  
Department of Electrical Engineering, **University of Surrey** (UK)  
[j.kittler@surrey.ac.uk](mailto:j.kittler@surrey.ac.uk) [https://www.surrey.ac.uk/cvssp/people/josef\\_kittler](https://www.surrey.ac.uk/cvssp/people/josef_kittler)
3. **Prof Hynek Hermansky**,  
Director of Center for Language and Speech Processing,  
Department of Electrical and Computer Engineering, **Johns Hopkins University** (USA)  
[hynek@jhu.edu](mailto:hynek@jhu.edu) <https://www.clsp.jhu.edu/faculty-pages/hynek>
4. **Prof Luc Van Gool**,  
Department of Electrical Engineering, **ETH Zurich** (CH)  
[vangool@vision.ee.ethz.ch](mailto:vangool@vision.ee.ethz.ch) <https://www.vision.ee.ethz.ch/en/members/detail/1>
5. **Prof Mark Nixon**,  
School of Electronics and Computer Science, **University of Southampton** (UK)  
[msn@ecs.soton.ac.uk](mailto:msn@ecs.soton.ac.uk) <http://users.ecs.soton.ac.uk/msn>
6. **Prof Prem Natarajan**,  
Michael Keston Executive Director of Information Sciences Institute,  
Vice Dean, USC Viterbi School of Engineering, **University of Southern California** (USA)  
[pnataraj@isi.edu](mailto:pnataraj@isi.edu) [https://www.isi.edu/about/bio/prem\\_natarajan](https://www.isi.edu/about/bio/prem_natarajan)
7. **Prof Jean-Philippe Thiran**,  
Electrical Engineering, **École Polytechnique Fédérale de Lausanne** (CH)  
[jean-philippe.thiran@epfl.ch](mailto:jean-philippe.thiran@epfl.ch) <https://lts5www.epfl.ch/thiran.html>
8. **Prof Matti Pietikainen**,  
Director of Center for Machine Vision Research,  
Department of Computer Science and Engineering, **University of Oulu** (FI)  
[matti.pietikainen@ee.oulu.fi](mailto:matti.pietikainen@ee.oulu.fi) <http://www.cse.oulu.fi/MattiPietikainen>

## PUBLICATIONS



Impact factor on Oct 3 2017: **H-INDEX: 42**, Number of cites: 5230 (source: [Google Scholar](#))

### PEER-REVIEWED JOURNAL ARTICLES

- [1] Z. Akhtar, A. Hadid, M. Nixon, M. Tistarelli, J-L. Dugelay, and S. Marcel. Biometrics: In search of identity and security (q & a). *IEEE MultiMedia*, PP(99), 2017.
- [2] P. Korshunov and S. Marcel. Impact of score fusion on voice biometrics and presentation attack detection in cross-database evaluations. *IEEE Journal of Selected Topics in Signal Processing*, 11(4):695–705, 2017.
- [3] H. Muckenhirn, P. Korshunov, M. Magimai-Doss, and S. Marcel. Long-term spectral statistics for voice presentation attack detection. *IEEE/ACM Transactions on Audio, Speech and Language Processing*, 25(11):2098–2111, 2017.
- [4] A. Morales, J. Fierrez, R. Tolosana, J. Ortega-Garcia, J. Galbally, M. Gomez-Barrero, A. Anjos, and S. Marcel. Keystroke biometrics ongoing competition. *IEEE Access*, PP(99), 2016.
- [5] A. Dutta, M. Günther, L. El-Shafey, S. Marcel, R. Veldhuis, and L. Spreeuwers. Impact of eye detection error on face recognition performance. *IET Biometrics*, page 14, January 2015. (in press).
- [6] N. Evans, S. Li, S. Marcel, and A. Ross. Guest editorial: Special issue on biometric spoofing and countermeasures. *IEEE Transactions on Information Forensics and Security*, 10(4):699–702, 2015.
- [7] A. Hadid, N. Evans, S. Marcel, and J. Fierrez. Biometrics systems under spoofing attack: an evaluation methodology and lessons learned. *IEEE Signal Processing Magazine*, 32(5):20–30, 2015.
- [8] A. Sizov, E. Khoury, T. Kinnunen, Z. Wu, and S. Marcel. Joint speaker verification and anti-spoofing in the i-vector space. *IEEE Transactions on Information Forensics and Security*, 10(4):821–832, 2015.
- [9] I. Chingovska, A. Anjos, and S. Marcel. Biometrics evaluation under spoofing attacks. *IEEE Transactions on Information Forensics and Security*, 9(12):2264–2276, 2014.
- [10] N. Erdogmus and S. Marcel. Spoofing face recognition with 3d masks. *IEEE Transactions on Information Forensics and Security*, 9(7):1084–1097, 2014.
- [11] J. Galbally, S. Marcel, and J. Fierrez. Biometric antispoofing methods: A survey in face recognition. *IEEE Access*, 2:1530–1552, 2014.
- [12] J. Galbally, S. Marcel, and J. Fierrez. Image quality assessment for fake biometric detection: Application to iris, fingerprint and face recognition. *IEEE Transactions on Image Processing*, 23(2):710–724, Feb 2014.
- [13] M.I. Mandasari, M. Günther, R. Wallace, R. Saeidi, S. Marcel, and D. Leeuwen. Score calibration in face recognition. *IET Biometrics*, 3(4):246–256, February 2014. (in press).
- [14] T.d.F. Pereira, J. Komulainen, A. Anjos, JM. Martino, A. Hadid, M. Pietikainen, and S. Marcel. Face liveness detection using dynamic texture. *EURASIP Journal on Image and Video Processing*, 4, 2014.

- [15] A. Anjos and S. Marcel. Motion-based counter-measures to photo attacks in face recognition. *IET Biometrics*, September 2013. (in press).
- [16] L. El-Shafey, C. McCool, R. Wallace, and S. Marcel. A scalable formulation of probabilistic linear discriminant analysis: Applied to face recognition. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 35(7):1788–1794, July 2013.
- [17] E. Houry, L. El Shafey, C. McCool, M. Günther, and S. Marcel. Bi-modal biometric authentication on mobile phones in challenging conditions. *Image and Vision Computing*, Oct 2013.
- [18] S. Marcel. BEAT biometrics evaluation and testing. *Biometric Technology Today*, 2013(1):5–7, 2013.
- [19] C. McCool, R. Wallace, M. McLaren, L. El-Shafey, and S. Marcel. Session variability modelling for face authentication. *IET Biometrics*, 2(3):117–129, September 2013. IET Premium Award 2015.
- [20] V.B. Subburaman and S. Marcel. Alternative search techniques for face detection using location estimation and binary features. *Computer Vision and Image Understanding*, 117(5):551–570, 2013.
- [21] A. Roy, M-M. Doss, and S. Marcel. A fast parts-based approach to speaker verification using boosted slice classifiers. *IEEE Transactions on Information Forensics and Security*, 7(1):241–254, 2012.
- [22] P. Tresadern, C. McCool, N. Poh, P. Matejka, H. Abdenour, C. Levy, T. Cootes, and S. Marcel. Mobile biometrics (mobio): Joint face and voice verification for a mobile platform. *IEEE Pervasive Computing*, 12(1):79–87, 2012.
- [23] R. Wallace, M. McLaren, C. McCool, and S. Marcel. Cross-pollination of normalisation techniques from speaker to face authentication using gaussian mixture models. *IEEE Transactions on Information Forensics and Security*, 7(2):553–562, 2012.
- [24] 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.
- [25] G. Heusch and S. Marcel. A novel statistical generative model dedicated to face recognition. *Image and Vision Computing*, 28(1):101–110, 2010.
- [26] C. McCool and S. Marcel. Feature distribution modelling techniques for 3d face verification. *Pattern Recognition Letters*, 31(11):1324–1330, 2010.
- [27] N. Poh, C-H. Chan, J. Kittler, S. Marcel, C. Mc Cool, E. Argones-Rúa, J-L. Alba-Castro, M. Villegas, R. Paredes, V. Struc, N. Pavesic, A.A. Salah, H. Fang, and N. Costen. An evaluation of video-to-video face verification. *IEEE Transactions on Information Forensics and Security*, 5(4):781–801, 2010.
- [28] 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.
- [29] 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.
- [30] S. Marcel, Y. Rodriguez, and G. Heusch. On the recent use of local binary patterns for face authentication. *International Journal on Image and Video Processing Special Issue on Facial Image Processing*, 2007. (accepted for publication but withdrawn because of author charges).
- [31] S. Bengio, C. Marcel, S. Marcel, and J. Mariéthoz. Confidence measures for multimodal identity verification. *Information Fusion*, 3(04):267–276, 2002.

#### PEER-REVIEWED CONFERENCE PROCEEDINGS

- [32] A. Anjos, L. El-Shafey, and S. Marcel. Beat: An open-science web platform. In *International Conference on Machine Learning*, 2017.

- [33] A. Anjos, M. Günther, T. de Freitas Pereira, P. Korshunov, A. Mohammadi, and S. Marcel. Continuously reproducing toolchains in pattern recognition and machine learning experiments. In *International Conference on Machine Learning*, 2017.
- [34] S. Bhattacharjee and S. Marcel. What you can't see can help you: extended-range imaging for 3d-mask presentation attack detection. In *IEEE International Conference of the Biometrics Special Interest Group (BIOSIG)*, 2017.
- [35] Z. Boulkenafet and al. A competition on generalized software-based face presentation attack detection in mobile scenarios. In *IEEE IAPR International Joint Conference on Biometrics (IJCB)*, 2017.
- [36] M. Cernak, A. Komaty, A. Mohammadi, A. Anjos, and S. Marcel. Bob speaks kaldi. In *Interspeech*, 2017.
- [37] A.R. Goncalves, P. Korshunov, R.P.V. Violato, F.O. Simões, and S. Marcel. On the generalization of fused systems in voice presentation attack detection. In *IEEE International Conference of the Biometrics Special Interest Group (BIOSIG)*, 2017.
- [38] H. Muckenhirn, M. Magimai-Doss, and S. Marcel. End-to-end convolutional neural network-based voice presentation attack detection. In *IEEE IAPR International Joint Conference on Biometrics (IJCB)*, 2017.
- [39] A. Sequeira and al. Cross-eyed 2017: Cross-spectral iris/periocular recognition database and competition. In *IEEE IAPR International Joint Conference on Biometrics (IJCB)*, 2017.
- [40] A. Costa-Pazo, S. Bhattacharjee, E. Vazquez-Fernandez, and S. Marcel. The replay-mobile face presentation-attack database. In *IEEE International Conference of the Biometrics Special Interest Group (BIOSIG)*, 2016.
- [41] T. de Freitas Pereira and S. Marcel. Heterogeneous face recognition using inter-session variability modelling. In *IEEE Computer Society Workshop on Biometrics*, 2016.
- [42] P. Korshunov and S. Marcel. Cross-database evaluation of audio-based spoofing detection systems. In *Interspeech*, 2016.
- [43] P. Korshunov and S. Marcel. Joint operation of voice biometrics and presentation attack detection. In *IEEE Sixth International Conference on Biometrics: Theory, Applications and Systems*, 2016.
- [44] P. Korshunov, S. Marcel, H. Muckenhirn, A. R. Goncalves, A. G. Souza Mello, R. P. Velloso Violato, F. Simoes, M. Uliani Neto, M. de Assis Angeloni, J. A. Stuchi, H. Dinkel, N. Chen, Y. Qian, D. Paul, G. Saha, and Md Sahidullah. Overview of btas 2016 speaker anti-spoofing competition. In *IEEE Sixth International Conference on Biometrics: Theory, Applications and Systems*, 2016.
- [45] H. Muckenhirn, M. Magimai-Doss, and S. Marcel. Presentation attack detection using long-term spectral statistics for trustworthy speaker verification. In *IEEE International Conference of the Biometrics Special Interest Group (BIOSIG)*, 2016.
- [46] R. Raghavendra, K. Raja, S. Marcel, and C. Busch. Face presentation attack detection across spectrum using time-frequency descriptors of maximal response in laplacian scale-space. In *Sixth International Conference on Image Processing Theory, Tools and Applications (IPTA)*, 2016.
- [47] A. Sequeira and al. Cross-eyed: Cross-spectral iris/periocular recognition database and competition. In *IEEE International Conference of the Biometrics Special Interest Group (BIOSIG)*, 2016.
- [48] N. Erdogmus, M. Vanoni, and S. Marcel. Within- and cross- database evaluations for face gender classification via befit protocols. In *International Workshop on Multimedia Signal Processing*, 2015.
- [49] S. Ergunay, E. Khoury, A. Lazaridis, and S. Marcel. On the vulnerability of speaker verification to realistic voice spoofing. In *IEEE Sixth International Conference on Biometrics: Theory, Applications and Systems*, 2015.
- [50] R. Mehta, M. Günther, and S. Marcel. Gender classification by lut based boosting of overlapping block patterns. In *Scandinavian Conference on Image Analysis (SCIA)*, 2015.
- [51] T. F. Pereira and S. Marcel. Periocular biometrics in mobile environment. In *IEEE Sixth International Conference on Biometrics: Theory, Applications and Systems*, 2015.



- [52] R. Raghavendra, M. Avinashy, S. Marcel, and C. Busch. Finger vein liveness detection using motion magnification. In *IEEE Sixth International Conference on Biometrics: Theory, Applications and Systems*, 2015.
- [53] P. Tome and S. Marcel. On the vulnerability to palm vein recognition to spoofing attacks. In *IAPR International Conference on Biometrics (ICB)*, 2015.
- [54] P. Tome and S. Marcel. Palm vein database and experimental framework for reproducible research. In *IEEE International Conference of the Biometrics Special Interest Group (BIOSIG)*, 2015.
- [55] P. Tome, R. Ramachandra, C. Busch, S. Tirunagari, N. Poh, B.H. Shekar, D. Gagnaniello, C. Sansone, and L. Verdoliva. The 1st competition on counter measures to finger vein spoofing attacks. In *IAPR International Conference on Biometrics (ICB)*, 2015.
- [56] J. Galbally and S. Marcel. Face anti-spoofing based on general image quality assessment. In *IEEE International Conference on Pattern Recognition*, 2014.
- [57] E. Khoury, T. Kinnunen, A. Sizov, Z. Wu, and S. Marcel. Introducing i-vectors for joint anti-spoofing and speaker verification. In *Annual Conference of the International Speech Communication Association (INTERSPEECH)*, 2014.
- [58] E. Khoury, L. El Shafey, M. Ferras, and S. Marcel. Hierarchical speaker clustering methods for the nist i-vector challenge. In *Odyssey: The Speaker and Language Recognition Workshop*, 2014.
- [59] E. Khoury, L. El Shafey, and S. Marcel. Spear: An open source toolbox for speaker recognition based on bob. In *Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2014.
- [60] A. Lazaridis, E. Khoury, J-P. Goldman, M. Avanzi, S. Marcel, and P. Garner. Swiss french regional accent identification. In *Odyssey: The Speaker and Language Recognition Workshop*, 2014.
- [61] L. El Shafey, E. Khoury, and S. Marcel. Audio-visual gender recognition in uncontrolled environment using variability modeling techniques. In *IEEE IAPR International Joint Conference on Biometrics (IJCB)*, 2014. IEEE/IAPR Best Paper Award.
- [62] P. Tome, M. Vanoni, and S. Marcel. On the vulnerability of finger vein recognition to spoofing. In *IEEE International Conference of the Biometrics Special Interest Group (BIOSIG)*, 2014.
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