

Idiap Research Institute, Rue Marconi 19, CH-1920 Martigny, Switzerland,
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 Google Scholar: <https://scholar.google.com/citations?user=vSRZivUAAAAJ>

Expertise

Research: Deepfakes generation and detection, multimodal age verification, lip-sync inconsistency detection, multi-modal fact checking, speech diarization and anti-spoofing, speaker recognition, protecting privacy in images/video, crowdsourcing, HDR imaging;

Engineering: C/Python open source projects, AI modeling with PyTorch and TensorFlow, video analytics and streaming, video and image compression (JPEG XT standard, H.264/ MPEG-4 AVC transcoder), Web-development, crowdsourcing systems;

More than **80 publications**, 3 best paper awards and 3 top 10% paper awards
 In Google Scholar: **h-index is 36** and **i10-index is 66**.

Academic experience

Idiap Research Institute, **Jul 2015–Present**
 Biometric Group
Research associate
 Group leader: Prof. Sébastien Marcel

École Polytechnique Fédérale de Lausanne (EPFL), **May 2011–Jun 2015**
 Multimedia Signal Processing Group
Research fellow or postdoc
 Group leader: Prof. Touradj Ebrahimi

National University of Singapore (NUS), **Aug 2003–Apr 2011**
 School of Computing
Ph.D. in Computer Science
 Advisor: Associate Professor Wei Tsang Ooi

St. Petersburg State University (SPbSU), **Sep 1997–Jul 2002**
 Mathematical-Mechanical faculty
Specialist (eq. to Masters degree) in Mathematics with major in Computer Science
 Advisor: Assistant Professor Dmitriy Koznov

Selected Publications

Vulnerability of Automatic Identity Recognition to Audio-Visual Deepfakes
P. Korshunov, H. Chen, P. N. Garner, and S. Marcel
 IEEE International Joint Conference on Biometrics (IJCB), Ljubljana, Slovenia, Sep 2023,
Best Poster Award.

Impact of Score Fusion on Voice Biometrics and Presentation Attack Detection in Cross-Database Evaluations
P. Korshunov and S. Marcel
 IEEE Journal of Selected Topics in Signal Processing, 2017.

Using Face Morphing to Protect Privacy
P. Korshunov and T. Ebrahimi
 IEEE International Conference on Advanced Video and Signal-Based Surveillance (AVSS), Kraków, Poland, Aug 2013.

Video Quality for Face Detection, Recognition and Tracking
P. Korshunov and W. T. Ooi
 ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM),
Nicolas D. Georganas Best Paper Award of 2011.

Research Experience

- PopEye EU HORIZON project (860K CHF)** Oct 2024–Present
Face and gait recognition at distance and bias mitigation
Wrote Idiap’s contribution to the proposal on face and gait recognition at a distance and bias assessment and mitigation. Now starting to lead the Idiap’s part of the project.
- VERIFAKE and FactCheck Hasler projects (100K CHF)** Aug 2024–Present
Deepfake detection and fact checking synthetic news
Wrote both of the proposals. Now guiding the postdoc to deliver the FactCheck project.
- ROSALIND Innosuisse project (880K CHF)** Feb 2024–Present
Generation and detection of deepfakes and forged documents
Wrote the project proposal and now leading the team of six on generation and detection of synthetic faces and documents to protect face recognition systems against injection attacks. Also, created a dataset of fantasy ID-documents for benchmarking.
- MARGIN and SENTINEL-UK (185K CHF) Innosuisse** Sep 2020–Present
Age verification and deepfakes detection
Led the writing and coordination of SENTINEL-UK proposal. Leading the Idiap’s team to develop audio-visual age assurance methods and protect them against replay and injection attacks with the aim to create a safe online environment for minors.
- USA DARPA Media Forensics program** May 2017–Jun 2020
Tampering detection in videos
Lead Idiap’s team to develop DNN-based techniques for inconsistency detection between speech and lips movements. One of the first impactful works on generation and detection of deepfake videos.
- Google’s and ODESSA projects** Jul 2015–Sep 2019
Speech diarization and anti-spoofing
Lead Idiap’s efforts in ODESSA project on speech diarization. Used DNNs for speaker anti-spoofing problem, cross-database speaker recognition and anti-spoofing experiments with implementation on BEAT platform.
- JPEG standardization** Sep 2012–Dec 2015
JPEG XT and privacy tasks
A co-author of JPEG XT compression standard for HDR images. Contributor to JPEG XT compression, JPEG XT verification tests, and JPEG privacy working groups.
- VideoSense EU FP7 project** May 2011–Apr 2015
Privacy in video surveillance
Lead and coordinated EPFL’s efforts in the project and contributed to the development of visual privacy filters (scrambling, warping, morphing, and false colors), evaluation methodologies (subjective, objective, and crowdsourcing), and evaluation datasets (HD, UHD, HDR, and mini-drones).
- De-Id and Qualinet COST Actions** Apr 2012–Nov 2014
Crowdsourcing and HDR
Conducted crowdsourcing evaluations of privacy, aesthetic appeal, and JPEG XT compression; Proposed architecture for region-based secure protection of images in social networks. Designed the dataset of HDR images and is studying the privacy intrusiveness of HDR.
- Ph.D. scholarship project** Sep 2004–Apr 2011
Video Quality for Video Analysis
Demonstrated the possibility to reduce the bitrate of streaming video when the observers are video analysis algorithms (face detection, recognition, and tracking). Proposed framework for estimating video quality for video analysis algorithms.

Student Supervision	EPFL and Idiap	<i>Informal supervision</i> May 2011–Present
	Supervised these students and interns at EPFL: Philippe Hanhart (PHD student), Yuan Lin (PHD student), Hiromi Nemoto (intern), Shuting Cai (visiting scientist), and Margherita Bonetto (intern). Supervised interns at Idiap: Eklavya Sarkar and Anubhav Jain.	
Teaching Experience	EPFL, Idiap, UniDistance	<i>Responsible assistant, part-time</i> Sep 2011–Dec 2022
	Coordinated other assistants, taught lectures, graded labs, supervised students:	
	<ul style="list-style-type: none"> • Fundamentals in Machine Learning (5 semesters); • Biometrics (2 semesters); • Open Science and Ethics (2 semesters); • Image and Video Processing (4 semesters); • Media Security (4 semesters); • Master, interns, undergraduate, and Ph.D. students (7 students); 	
	National University of Singapore	<i>Teaching Assistant, part-time/full-time</i> Aug 2005–May 2007/Jan 2008–Dec 2009
	Conducted tutorials and labs, designed and graded exercises, tutorials, labs, and exams:	
	<ul style="list-style-type: none"> • 3D Computer Graphics with OpenGL (2 semesters); • Programming Methodology with C (4 semesters); • Data Structures and Algorithms (2 semesters); • Database Management (1 semester); 	
System Development Experience	Various development work <i>Singapore and Switzerland</i>	<i>Throughout the projects</i> July 2007–Present
	Contributed to different industrial and academic development projects, including a web-based presentation capturing system for a research lab in Palo Alto, CA (2007), a CMS system for a hospital in Singapore (2010), an H.264 video transcoder for a startup in Lausanne (2011), and DARPA’s suite of media forensics tools in USA (2019), and multi-modal age verification tools for Privately in Lausanne (2021).	
	Bob and Pyannote toolkits <i>Martigny, Switzerland</i>	<i>Research Associate</i> Jul 2015–Present
	Contributing to a machine learning toolkit Bob (https://www.idiap.ch/software/bob/) and a speech diarization toolkit Pyannote (https://github.com/pyannote/).	
	Live Video Manipulation Tool <i>Singapore</i>	<i>Ph.D. student</i> Sep 2006–Jan 2007
	Developed an extension to Plasma, a scripting language and a tool for manipulation and spatial arrangement of multiple live and stored video streams.	
	Video Surveillance Prototype <i>Singapore</i>	<i>Ph.D. student</i> Jan 2005–Jun 2010
	Implemented a prototype demonstrating that large bandwidth savings can be achieved when video is streamed to be processed by video analysis algorithms.	
Service	Member of IEEE Information Forensics and Security Technical Committee in 2021-2023. An invited/keynote speaker at NUS (Singapore) in 2014, 2016, 2022, at FXPAL (USA) in 2014 and 2015, in VideoSense winter school (Italy) in 2014, at Heidelberg University (Germany) in 2014, at AI-Workshop in 2017, at LIMSI lab (France) in 2018, at Tech4Trust	

in 2019, at European Association for Biometrics (EAB) in 2016, 2020, 2022, at IFS webinar in 2022, at IAPR webinar in 2022, at AI4MDD in 2022, and at Wissenswerte in 2022. **An organizer** of Visual Privacy and DroneProtect tasks within MediaEval benchmarking initiative in 2012, 2013, 2014, and 2015, Special Session on ‘HDR Imaging and Privacy’ in SPIE Europe 2014, ICML Workshop on Detecting Audio-Visual Fakes in 2019, ADGD Workshop at ACM Multimedia 2021, and the publicity chair of IJCB 2024.

A board member of IEEE MMTTC R-Letter: the reviewer and editor of papers in Oct 2013, Feb 2015, and Jun 2015 issues

A TPC member and a reviewer in 2011-2024 for MMSys, ACM MM, ICME, CrowdMM, NOSSDAV, QoMEX, IEEE TIFS, IEEE TIP, IEEE MM, EURASIP, IEEE TCSVT, IEEE TIE, IEEE JSAC, IEEE SPL, IEEE WIFS, and IEEE Image Communic.

A volunteer for VTC’08, ACM MM’05, and Mobwiser’04

Wrote “PhD Survival Guide” for School of Computing, NUS, 2011

Helped during the orientation days for new PhD students in NUS, 2008–2010.

A group leader during undergraduate studies, 1997–2001.

Skills

Programming and Systems:

C, C++, Java, JavaScript, PHP, Python, Tcl/Tk, Unix shell; Apache, Django, FFmpeg, GitLab (GitHub), Matlab, NumPy, MySQL, OpenCV, PyTorch, Tensorflow

Operating Systems: Linux, OS X, Windows

Language Skills: spoken and written English; spoken and written Russian; B1 French;

Other Skills: strong analytical skills; social and easy going; independent worker; passionate about cool things and challenges; energetic team player; stubborn when it comes to making things work and solving problems.

References

Sébastien Marcel, Professor and senior researcher

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More references can be provided on request.