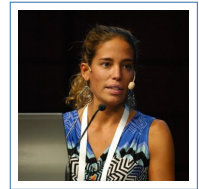


Prof. Dr. Marta Gomez-Barrero

Curriculum Vitae

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🌐 marta-gomez-barrero.netlify.com/
Birthday: 12.11.1988



Education

- 2013–2016 **PhD Telecommunications Engineering**, *Universidad Autonoma de Madrid*, Spain, Cum Laude (maximum honour for a PhD in Spain).
International Mention
- 2011–2013 **MPhil Computer Science and Telecommunications Engineering**, *Universidad Autonoma de Madrid*, Spain, 8.89/10.
Major on Digital Signal Processing
- 2006–2011 **MSc Computer Science Engineering**, *Universidad Autonoma de Madrid*, Spain, 8.52/10.
6 Distinctions
- 2006–2011 **MSc Mathematics**, *Universidad Autonoma de Madrid*, Spain, 8.52/10.
2 Distinctions

PhD Thesis

- Title *Improving Security and Privacy in Biometric Systems*
- Supervisor Dr. Javier Galbally
- Description Security and privacy evaluation of biometric systems, and proposal of new biometric and multi-biometric template protection schemes based on Bloom Filters or Homomorphic Encryption, compliant with the ISO/IEC IS 24745
- Awards **European Biometrics Industry Award 2015** from the European Association for Biometrics (EAB) and **Best Ph.D. Thesis Award by Universidad Autonoma de Madrid 2015/16**

Masters Thesis

- Title *Biometric Security: A New Multimodal Hill-Climbing Attack*
- Supervisor Dr. Javier Galbally
- Description First indirect or software attack to multimodal biometric systems, with a case study in face and iris fusion
- Awards Archimedes Award for Young Researches from Spanish Ministry of Education

Experience: Research

- 2020–Present **Professor for IT-Security and technical privacy protection**, *Hochschule Ansbach*, Germany. Research Machine Learning, Pattern Recognition and Cryptography techniques applied to biometrics. Specifically, research on different aspects related to the security and privacy of biometric systems, including the development of Presentation Attack Detection (PAD) and biometric template protection (BTP) technologies. I am in charge of the project management tasks for the RESPECT international project.

- 2016–2020 **PostDoc Researcher**, *Nationales Forschungszentrum für angewandte Cybersicherheit (ATHENE)*, Germany.
 Research Machine Learning, Pattern Recognition and Cryptography techniques applied to biometrics. Specifically, research on different aspects related to the security and privacy of biometric systems, including the development of Presentation Attack Detection (PAD) technologies. I am in charge of the project management tasks for the BATL, SOTAMD and RESPECT international projects.
 Within the BATL project, a fully functional prototype is being developed for the US Government to carry out iris, fingerprint and face recognition with presentation attack detection capabilities (i.e., software and hardware development). To manage the research load, I supervise two PhD students and several Master and Bachelor Theses.
- 2012–2016 **Doctoral Researcher**, *Universidad Autonoma de Madrid*, Spain.
 Researched Computer Vision, Machine Learning, Pattern Recognition and Cryptography techniques applied to biometrics. Specifically, developed new inverse biometric techniques based on optimization algorithms for iris- and handshape-based recognition systems. Afterwards, proposed new template protection schemes based on Bloom filters (cancelable biometrics) for face, fingervein, and feature-level fusion, and based on Semi-Homomorphic Encryption for variable-length templates and multi-biometric fixed-length templates. A framework to evaluate biometric template protection schemes for benchmarks and competitive evaluations was developed, and presented within the ISO/IEC JTC 1/ SC 37 - biometrics meeting. In addition, an adaptation of Common Criteria standards for biometric systems evaluation was carried out, and an online evaluation platform (<https://www.beat-eu.org/platform/>) was developed to guarantee privacy protection in accordance with the EU Directive 95/46/EC and the current GDPR.
- 2011–2012 **Graduate Research Assistant**, *Universidad Autonoma de Madrid*, Spain.
 Vulnerability evaluation of biometric recognition systems based on face, iris, on-line signature, and multimodal systems.
- 2010–2011 **Undergraduate Research Assistant**, *Universidad Autonoma de Madrid*, Spain.
 Introduction to Signal Processing and biometrics, developing new indirect attacks to biometric systems based on hill-climbing algorithms.

Experience: Teaching

- 2020–Present **Professor**, *Hochschule Ansbach*, Germany.
- Technical und Organisatorische Datenschutzmaßnahmen (Technical and organisational privacy protection measures, 2nd Semester BSc on IT-Security and Privacy Protection, in German)
 - Einführung in die IT-Sicherheit (Introduction to IT-Security, 1st Semester BSc on IT-Security and Privacy Protection, in German)
 - Kryptographie (Cryptography, 2nd Semester BSc on IT-Security and Privacy Protection, in German)
 - Privacy Engineering (3rd Semester BSc on IT-Security and Privacy Protection, in German)
- 2018–2020 **Lead Lecturer**, *Hochschule Darmstadt*, Germany.
- IT-Sicherheit (IT-Security, 1st Semester BSc on Computer Science, in German)
- 2017–2020 **Teaching Assistant**, *Hochschule Darmstadt*, Germany.
- Biometric Systems (MSc on Computer Science, Electrical Engineering, in English)
 - Master Seminar: Advanced Topics in Biometrics (MSc on Computer Science, Electrical Engineering, in English)
- 2017–Present **Teaching Assistant**, *Norwegian University of Science and Technology*, Gjøvik, Norway.
- Biometric Systems (MSc and PhD Students on Computer Science, in English)
- 2012–2016 **Teaching Assistant**, *Universidad Autonoma de Madrid*, Spain.
- Multimedia Signal Processing (3rd year, BSc on Telecommunications Engineering, in Spanish)
 - Hardware Workshop (1st year, BSc on Computer Engineering, in English)

Self-Acquired Research Projects: Project Management + Research

International

- 2019–2022 **RESPECT: RELiable, Secure and Privacy preserving multi-biometric pErson authentiCa-Tion**, *Deutsche Forschungsgemeinschaft (DFG) and Agencie Nationale de la Recherche (ANR)*, (GO 2981/2-1), Partners: ATHENE, EURECOM, Inria.
 Funding for ATHENE: 535k EUR

- 2019–2020 **SOTAMD: State of the art of Morphing Detection**, *European Union's Internal Security Fund – Borders and Visa*, (ISFB-2018-AG-IBA-MORP), Partners: National Office for Identity Data (NOI), Bundeskriminalamt (BKA), Alma Mater Studiorum - Universita di Bologna, Norwegian University of Science and Technology (NTNU), ATHENE, Universiteit Twente.
Funding for ATHENE: 300k EUR
- 2017–2020 **BATL: Biometric Authentication with Timeless Learner**, *US Intelligence Advanced Research Projects Activity (IARPA)*, Thor Program (IARPA-BAA-16-04), Partners: USC Viterbi School of Engineering Computer Science Department, Idiap Research Institute, ATHENE and NTNU, TREX Enterprises, Northrop Grumman Corporation.
Funding for ATHENE: 950k USD

Research Projects: Only Research Activities

International

- 2012–2016 **BEAT: Biometrics Evaluation and Testing**, *European Commission*, FP7, Small or Medium-Scale Focused Research Project (FP7-SEC-284989), Partners: IDIAP, UAM, University of Surrey, EPFL, TUBITAK, Commissariat a l'Energie Atomique - LETI (CEA), Morpho, TÜViT, KU Leuven, Chalmers Tekniska Hoegskola Ab.
- 2011–2014 **TABULA RASA: Trusted Biometrics Under Spoofing Attacks**, *European Commission*, FP7, Small or Medium-Scale Focused Research Project (FP7-ICT-257289), Partners: IDIAP, University of Oulu, UAM, University of Southampton, University of Cagliari, EURECOM, CASIA, Starlab, Morpho, KeyLeom, Biometry.com AG, Centre for Science, Society and Citizenship (CSSC).

National: Public Funding

- 2018–2019 **DIRECT-PAD: Presentation Attack Detection in der Fingerprint-Erkennung. Entwicklung und Evaluierung von Detektions-Verfahren**, *Bundesamt für Sicherheit in der Informationstechnik (BSI)*.
- 2017–2018 **BIO-INDEX: Skalierbare biometrische Identifikations-Systeme**, *Bundesministerium für Bildung und Forschung (BMBF)*.
- 2016–2018 **CogniMetrics: Cognitive Biometric Authentication: Identifying People by Means of their Interaction**, *Spanish Ministry of Science and Innovation*, Plan Nacional de I+D+I (TEC2015-70627-R).
- 2013–2015 **BIO-SHIELD: Performance Evaluation and Countermeasures to Attacks and Security Threats on Biometric Systems**, *Spanish Ministry of Science and Innovation*, Plan Nacional de I+D+I (TEC2012-34881).
- 2010–2013 **CONTEXTS: Concepts and Technologies for Services Development**, *Spanish Ministry of Science and Innovation*, Plan Nacional de I+D+I (S2009/TIC-1485).
- 2010–2012 **BIO-CHALLENGE: Critical Aspects in Last-Generation Biometric Recognition: Quality, Vulnerabilities, Privacy and Acquisition at a Distance**, *Spanish Ministry of Science and Innovation*, Plan Nacional de I+D+I (TEC2009-11186).

National: Private Funding

- 2015–2016 **BIOTRACE_100: High-Performance Biometric Signature Authentication System for Banking Applications**, *R&D Contract with Cecabank*, Transfer of privacy-preserving signature recognition technology, including the development of an SDK to be integrated with the Ceca systems..
- 2014–2015 **e-BioSign: Improvement of Signature Comparison Technology**, *R&D Contract with Ceca-bank*, Development of methods and tools to enable the forensic comparison of dynamic signatures, under the same principles followed by forensic experts when comparing signature images..

2010–2014 **Catedra UAM - Telefonica**, *R&D Contract with Telefonica International*, R&D in biometrics for secure authentication. Various dissemination actions at university level to promote science and technology with application to the areas of interest of Telefonica..

Patents

2019– **Detecting artificial facial images using facial landmarks**, <https://patentscope.wipo.int/search/en/detail.jsf?docId=W02018234384>.

Languages

Spanish **Native Speaker**
English **Bilingual Proficiency**
German **Full Professional Proficiency**
Italian **Full Professional Proficiency**
Norwegian **Professional Working Proficiency**
Portuguese **Elementary Proficiency**
Russian **Elementary Proficiency**

Talks

- 2020-10-28 **Presentation Attack Detection and Unknown Attacks**, *NIST Int. Face Performance Conf. (IFPC)*, Online, <https://www.nist.gov/news-events/events/2020/10/international-face-performance-conference-ifpc-2020>.
- 2020-07-09 **Lecture and Hands-On Session on Information Security**, *VISUM Summer School*, Online, <http://visum.inesctec.pt/>.
- 2020-06-15 **Webinar on Biometric Template Protection and Evaluation**, *European Association for Biometrics (EAB) Webinars*, BigBlueButton, Available at https://eab.org/events/lecture_barrero-200615.html.
- 2019-06-13 **Keynote on the Latest Advances on Biometric Template Protection and Presentation Attack Detection**, *Identity Week*, London, UK, <https://www.terrapinn.com/exhibition/identity-week/>.
- 2019-04-25 **Seminar on Biometric Template Protection and Evaluation**, *COSIC Seminar at the KU Leuven*, Leuven, Belgium, <https://www.eab.org/news/eab-news.html/187>.
- 2018-12-10 **Tutorial on Biometric Template Protection and Evaluation**, *IEEE Int. Workshop on Information Forensics and Security (WIFS)*, Hong Kong, <https://wifs2018.comp.polyu.edu.hk/tutorials.html>.
- 2018-11-28 **Vulnerability Evaluation of Presentation + Morphing Attacks**, *NIST Int. Face Performance Conf. (IFPC)*, Gaithersburg, USA, <https://www.nist.gov/news-events/events/2018/11/international-face-performance-conference-ifpc-2018>.
- 2017-10-19 **Secure and Privacy Preserving Biometric Systems: from Biometric Template Protection to Presentation Attack Detection**, *Preserving Privacy in an age of increased surveillance - A Biometrics Perspective*, IBM London, UK, http://eab.org/events/past_events.html?ts=1508493277447.
- 2017-06-22 **Biometric Symmetry: Implications on Template Protection**, *da/sec Scientific Talk*, Hochschule Darmstadt, Germany, <https://www.dasec.h-da.de/teaching/dasec-scientific-talk/2017-06-22-on-biometrics/>.
- 2017-05-09 **Security and Privacy in Biometric Systems**, *Lecture at COINS Information Security Winter School*, Finse, Norway, <https://coinsrs.no/coins-winter-school-2017-in-finse/>.
- 2017-03-10 **Biometric Template Protection and Unlinkability**, *NISlab Seminar*, NTNU, Gjøvik, Norway.

- 2017-01-30 **Measuring Unlinkability in Biometric Template Protection Schemes**, *Presentation at ISO/JTC1 SC37 WG5 meeting*, Sydney, Australia.
- 2015-09-09 **Fully Unlinkable and Irreversible Template Protection Based on Bloom Filters**, *EAB Biometrics Research and Industry Awards 2015*, Darmstadt, Germany, <http://eab.org/events/program/77>.
- 2015-02-20 **Biometric Template Protection and Bloom Filters**, *NISlab Seminar*, NTNU, Gjøvik, Norway.

Doctoral Research Stays

- Feb–March 2016 **NBL, NISlab - NTNU i Gjøvik, Norway**, Advisor: Prof. Christoph Busch.
Multi-biometric template protection system based on Bloom Filters.
- May–July 2015 **COMLAB - Università Roma TRE, Italy**, Advisor: Prof. Patrizio Campisi.
Multi-biometric template protection system based on Homomorphic Encryption.
- Jan–March 2015 **NBL, NISlab - Høgskolen i Gjøvik, Norway**, Advisor: Prof. Christoph Busch.
Fingervein template protection system based on Bloom Filters.
- Oct–Dec 2013 **Center for Advanced Security Research Darmstadt (CASED), Germany**, Advisor: Prof. Christoph Busch.
Face template protection system based on Bloom Filters

Awards and Honors

- 2018 **Best Paper Award at Odyssey 2018** ISCA/SpLC
- 2017 **Best Paper Awards Finalist at IWBF 2017** IAPR
- 2016 **Best Paper Awards Finalist at IWBF 2016** COST
- 2016 **Best Ph.D. Thesis Award by Universidad Autonoma de Madrid 2015/16** UAM
- 2015 **European Biometrics Industry Award 2015** European Association for Biometrics (EAB)
- 2015 **Siew-Sngiem Best Paper Award at ICB 2015** IAPR/IEEE
- 2013 **Archimedes Award for Young Researches** Spanish Ministry of Education
- 2013 **ICB Best Poster Award** IAPR/IEEE
- 2006 **Participation in the XIX National Chemistry Olympic Games**
- 2006 **III Prize in the Chemistry Olympic Games, Madrid**
- 2004–2005 **Prizewinner in the Spring Maths Contest** Universidad Complutense de Madrid

Grants and Scholarships

- 2016 **COST Action IC1106 Short-Term Scientific Mission Grant (STSM)**, NBL, NISlab - NTNU i Gjøvik, Norway, Supervisor: Prof. Christoph Busch.
Towards a General Framework for Privacy-Preserving Unimodal and Multimodal Biometric Verification
- 2015 **COST Action IC1106 Short-Term Scientific Mission Grant (STSM)**, NBL, NISlab - Høgskolen i Gjøvik, Norway, Supervisor: Prof. Christoph Busch.
Towards Privacy-Preserving Comparison of Finger Vein Patterns
- 2015 **CASED Research Internship Grant**
- 2013-2016 **FPU Fellowship** PhD Grant from Spanish Ministry of Education
- 2012-2013 **FPI-UAM Fellowship** PhD Grant from Universidad Autonoma de Madrid
- 2012 **Travel & Fees Grant to the Int.I Summer School on Biometrics** IAPR
- 2012 **Student Travel Scholarship to Int. Conf. on Biometrics** IAPR
- 2011 **Collaboration Scholarship from Spanish Ministry of Education**, ATVS - Biometric Recognition Group, Universidad Autonoma de Madrid, Spain, Supervisor: Javier Galbally.
Vulnerabilities of On-Line Signature Recognition Systems to hill-Climbing Attacks

- 2009–2010 **Academic Excellence Scholarship from Madrid City Council**, *Computer Science Department, Universidad Autonoma de Madrid, Spain*, Supervisor: Prof. Jose R. Dorronsoro.
Granted to the top 0.5% students in Madrid.
Topic: Pattern Recognition and Neural Networks
- 2008–2009 **Academic Excellence Scholarship from Madrid City Council**, *Computer Science Department, Universidad Autonoma de Madrid, Spain*, Supervisor: Prof. Jose R. Dorronsoro.
Granted to the top 0.5% students in Madrid.
Topic: Introduction to Pattern Recognition
- 2007–2008 **Academic Excellence Scholarship from Madrid City Council**, *Mathematics Department, Universidad Autonoma de Madrid, Spain*, Supervisor: Prof. Andrei Jaikin.
Granted to the top 0.5% students in Madrid.
Topic: Stable Marriage Problem
- 2006–2007 **Academic Excellence Scholarship from Madrid City Council**, *Mathematics Department, Universidad Autonoma de Madrid, Spain*, Supervisor: Prof. Fernando Chamizo.
Granted to the top 0.5% students in Madrid.
Topic: Quaternions and Rotations

Certificates

- 2018 **Protecting Human Research Participants** *NIH - National Institutes of Health*
- 2017 **Human Subjects Research - Social-Behavioral-Educational Basic** *CITI Program*
- 2008 **Certificate of Proficiency in English (Grade B)** *Cambridge University*

Courses

- 2012 **Summer School for Advanced Studies on Biometrics for Secure Authentication** *Alghero, Italy*

MOOC

- 2012 **Cryptography I** *Stanford University*
- 2012 **Machine Learning** *Stanford University*

Technical skills

- Languages C, JAVA, PYTHON, LISP, SQL, PHP, INTEL 8086 ASSEMBLER, MATLAB, VHDL
- OS Linux, Microsoft Windows, DOS, OSx
- Design UML
- Others Eclipse, NetBeans, MS Visual Studio, L^AT_EX, Subversion, GitHub

Services

- 2019–Present **Co-Chair of the Academia Special Interest Group** *European Association for Biometrics (EAB)*
- 2016–Present **Member of the European Association for Biometrics (EAB)**
- 2016–Present **Member of the Deutsches Institut für Normung (DIN)** *Delegate for the ISO/IEC JTC 1/SC 37 – Biometrics*
- 2012–2013 **Student representative**, *Universidad Autonoma de Madrid, Spain*.
Student representative for the Committee developing the new Master on “Research and Innovation on Information and Communication Technology (ICT)”

Journal Reviewer (JCR)

- 2017 **IEEE Trans. on Cybernetics** *JCR = 4.943, Q1*
- 2015 **Elsevier Information Fusion** *JCR = 3.681, Q1*
- 2016–2020 **Elsevier Pattern Recognition** *JCR = 3.399, Q1*
- 2020–2020 **Elsevier Computer & Security** *JCR = 3.062, Q1*

2014–2020	IEEE Trans. on Information Forensics and Security	<i>JCR = 2.065, Q1</i>
2016	MDPI AG Sensors	<i>JCR = 2.033, Q2</i>
2014–2018	Elsevier Expert Systems with Applications	<i>JCR = 1.965, Q1</i>
2016	MDPI AG Entropy	<i>JCR = 1.743, Q2</i>
2015–2016	IEEE Trans. on Systems Man Cybernetics - Systems	<i>JCR = 1.699, Q2</i>
2015–2017	Elsevier Pattern Recognition Letters	<i>JCR = 1.551, Q2</i>
2015–2018	Elsevier Multimedia Tools and Applications	<i>JCR = 1.346, Q2</i>
2016	IEEE Trans. on Learning Technologies	<i>JCR = 1.129, Q3</i>
2012–2020	IET Biometrics	<i>JCR = 0.857, Q3</i>
2015	IET Image Processing	<i>JCR = 0.753, Q3</i>
2015	EURASIP Journal on Image and Video Processing	<i>JCR = 0.662, Q3</i>
2015	IEICE Trans. Fundam. Electron. Commun. Comput. Sci.	<i>JCR = 0.231, Q4</i>
2015–2019	EURASIP Journal on Information Security	
	Journal Editor	
2020	Pattern Recognition , <i>SI on Masked Face Recognition and Touchless Biometrics at the time of COVID-19.</i>	
2020	IET Biometrics , <i>BIOSIG 2020 SI on Trustworthiness of Person Authentication.</i>	
2017	Datenschutz und Datensicherheit , <i>Schwerpunkt: Biometrie - Sicherheits- und DS-Konzepte</i> , English: Biometrics - Security and Privacy Concepts.	
	Journal Associate Editor	
2019–	EURASIP Journal on Information Security.	
	Organization of International Conferences	
2021–Present	General Chair of BIOSIG	<i>Darmstadt, Germany</i>
2021	Sponsor Chair at WACV 2021 Workshop on Explainable & Interpretable Artificial Intelligence for Biometrics <i>Online</i>	
2020	Publication Chair at Int. Workshop on Biometrics and Forensics, IWBF	<i>Porto, Portugal</i>
2018	Special Session Chair at European Signal Processing Conf., EUSIPCO	<i>Rome, Italy</i>
2018	Program Comm. Int. Conf. on Identity, Security and Behavior Analysis, ISBA	<i>Singapore</i>
2017	Program Comm. European Signal Processing Conf., EUSIPCO	<i>Kos, Greece</i>
2017	Program Comm. Int. Carnahan Conf. on Security Technology, ICCST	<i>Madrid, Spain</i>
2016–Present	Program Committee BIOSIG	<i>Darmstadt, Germany</i>
2016	Program Comm. Int. Conf. Image Proc. Theory, Tools and App., IPTA	<i>Oulu, Finland</i>
2015	Program Committee Int. Conf. on Biometrics, ICB	<i>Phuket, Thailand</i>
2014	Program Committee Int. Joint Conf. on Biometrics, IJCB	<i>Florida, USA</i>
2013	Local Organizing Committee Int. Conf. on Biometrics, ICB	<i>Madrid, Spain</i>
	Organization of International Competitions	
2016	Keystroke Biometrics Ongoing Competition (KBOC) at BTAS	<i>Buffalo, USA</i>

Peer Reviewed Publications

Journal Articles

- [1] L. J. Gonzalez-Soler, M. Gomez-Barrero, L. Chang, A. Perez-Suarez, and C. Busch, "Local feature encoding for unknown presentation attack detection: An analysis of different local feature descriptors," *IET Biometrics*, 2020, Submitted.

- [2] L. J. Gonzalez-Soler, **M. Gomez-Barrero**, L. Chang, A. Perez-Suarez, J. Hernandez-Palancar, and C. Busch, "Fingerprint presentation attack detection based on local features encoding for unknown attacks," *IEEE Access*, 2020, Submitted.
- [3] J. Kolberg, M. Grimmer, **M. Gomez-Barrero**, and C. Busch, "Anomaly detection with convolutional autoencoders for fingerprint presentation attack detection," *IEEE Trans. on Biometrics, Behavior, and Identity Science*, 2020, Submitted. Available at <http://arxiv.org/abs/2008.07989>.
- [4] J. Kolberg, M. Gomez-Barrero, and C. Busch, "On the generalisation capabilities of fingerprint presentation attack detection methods in the short wave infrared domain," *IET Biometrics*, 2020, Submitted.
- [5] E. Piciucco, E. Maiorana, C. Kauba, B. Prommegger, **M. Gomez-Barrero**, A. Uhl, and P. Campisi, "Towards practical cancelable biometrics for finger vein recognition," *IEEE Trans. on Dependable and Secure Computing*, 2020, Submitted.
- [6] K. Raja, M. Ferrara, A. Franco, L. Spreeuwers, I. Batskos, F. D. Wit, **M. Gomez-Barrero**, U. Scherhag, D. Fischer, S. Venkatesh, J. M. Singh, G. Li, L. Bergeron, S. Isadskiy, R. Ramachandra, C. Rathgeb, D. Frings, U. Seidel, F. Knopjes, R. Veldhuis, D. Maltoni, and C. Busch, "Morphing attack detection - database, evaluation platform and benchmarking," *IEEE Trans. on Information Forensics and Security*, 2020.
- [7] **M. Gomez-Barrero** and J. Galbally, "Reversing the irreversible: A survey on inverse biometrics," *Elsevier Computers & Security*, vol. 90, p. 101700, Mar. 2020.
- [8] **M. Gomez-Barrero**, J. Kolberg, and C. Busch, "Fingerabdruck Präsentation Angriffe Erkennung: Aktueller Stand und offene Herausforderungen," *Datenschutz und Datensicherheit*, vol. 44, pp. 26–31, Jan. 2020.
- [9] A. Nautsch, A. Jiménez, A. Treiber, J. Kolberg, C. Jasserand, E. Kindt, H. Delgado, M. Todisco, M. A. Hmani, A. Mtibaa, M. A. Abdelraheem, A. Abad, F. Texeira, **M. Gomez-Barrero**, D. Petrovska, G. Chollet, N. Evans, T. Schneider, J. F. Bonastre, B. Raj, I. Trancoso, and C. Busch, "Preserving privacy in speaker and speech characterisation," *Computer Speech & Language*, vol. 58, pp. 441–480, 2019.
- [10] R. Tolosana, **M. Gomez-Barrero**, C. Busch, and J. Ortega-Garcia, "Biometric presentation attack detection: Beyond the visible spectrum," *IEEE Trans. on Information Forensics and Security*, vol. 15, no. 1, pp. 1261–1275, Dec. 2019.
- [11] **M. Gomez-Barrero**, J. Galbally, C. Rathgeb, and C. Busch, "General framework to evaluate unlinkability in biometric template protection systems," *IEEE Trans. on Information Forensics and Security*, vol. 3, no. 6, pp. 1406–1420, Jun. 2018.
- [12] **M. Gomez-Barrero**, C. Rathgeb, G. Li, R. Raghavendra, J. Galbally, and C. Busch, "Multi-biometric template protection based on Bloom filters," *Information Fusion*, vol. 42, pp. 37–50, Jul. 2018.
- [13] **M. Gomez-Barrero**, C. Rathgeb, U. Scherhag, and C. Busch, "Predicting the vulnerability of biometric systems to attacks based on morphed biometric information," *IET Biometrics*, vol. 7, no. 4, pp. 333–341, Jul. 2018.
- [14] E. Martiri, **M. Gomez-Barrero**, B. Yang, and C. Busch, "Biometric template protection based on Bloom filters and honey templates," *IET Biometrics*, vol. 6, no. 1, pp. 19–26, Jan. 2017.
- [15] **M. Gomez-Barrero**, "Biometrie und Datenschutz," *Datenschutz und Datensicherheit, Gateway*, vol. 41, no. 7, p. 448, Jul. 2017.
- [16] **M. Gomez-Barrero**, J. Galbally, A. Morales, and J. Fierrez, "Privacy-preserving comparison of variable-length data with application to biometric template protection," *IEEE Access*, vol. 5, no. 1, pp. 8606–8619, Dec. 2017.
- [17] **M. Gomez-Barrero**, E. Maiorana, J. Galbally, P. Campisi, and J. Fierrez, "Multi-biometric template protection based on Homomorphic Encryption," *Pattern Recognition*, vol. 67, pp. 149–163, Jul. 2017.
- [18] **M. Gomez-Barrero**, C. Rathgeb, and C. Busch, "Standardisierung von Biometric Template Protection: Aktueller Status und Bewertung der Verknüpfbarkeit," *Datenschutz und Datensicherheit*, vol. 41, no. 7, pp. 422–426, Jul. 2017.

- [19] **M. Gomez-Barrero** and H. Reimer, "Biometrie - die Herausforderungen bleiben!" *Datenschutz und Datensicherheit, Editorial*, vol. 41, no. 7, p. 397, Jul. 2017.
- [20] 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*, vol. 4, pp. 7736–7746, Nov. 2016.
- [21] **M. Gomez-Barrero**, C. Rathgeb, J. Galbally, C. Busch, and J. Fierrez, "Unlinkable and irreversible biometric template protection based on Bloom filters," *Information Sciences*, vol. 370-371, pp. 18–32, Nov. 2016.
- [22] J. Galbally, M. Diaz-Cabrera, M. A. Ferrer, **M. Gomez-Barrero**, A. Morales, and J. Fierrez, "On-line signature recognition through the combination of real dynamic data and synthetically generated static data," *Pattern Recognition*, vol. 48, pp. 2921–2934, Sep. 2015.
- [23] **M. Gomez-Barrero**, J. Galbally, and J. Fierrez, "Efficient software attack to multimodal biometric systems and its application to face and iris fusion," *Pattern Recognition Letters*, vol. 36, pp. 243–253, Jan. 2014.
- [24] **M. Gomez-Barrero**, J. Galbally, A. Morales, M. A. Ferrer, J. Fierrez, and J. Ortega-Garcia, "A novel hand reconstruction approach and its application to vulnerability assessment," *Information Sciences*, vol. 268, pp. 103–121, Jun. 2014.
- [25] J. Galbally, A. Ross, **M. Gomez-Barrero**, J. Fierrez, and J. Ortega-Garcia, "Iris image reconstruction from binary templates: An efficient probabilistic approach based on genetic algorithms," *Computer Vision and Image Understanding*, vol. 117, no. 10, pp. 1512–1525, Oct. 2013, Selected for Elsevier Virtual Issue: Celebrating the Breadth of Biometrics Research.

Book Chapters

- [26] J. Kolberg, **M. Gomez-Barrero**, S. Venkatesh, R. Raghavendra, and C. Busch, "Presentation attack detection with vein recognition," in *Handbook of Vascular Biometrics*, S. Marcel, A. Uhl, R. Veldhuis, and C. Busch, Eds., 2020, pp. 435–463.
- [27] V. Krivokuca, **M. Gomez-Barrero**, S. Marcel, C. Rathgeb, and C. Busch, "Towards measuring the amount of discriminatory information in fingervein using a relative entropy estimator," in *Handbook of Vascular Biometrics*, A. Uhl, C. Busch, S. Marcel, and R. Veldhuis, Eds., Springer, 2020, pp. 507–525.
- [28] **M. Gomez-Barrero**, "Fingervein," in *Encyclopedia of Cryptography, Security and Privacy*, S. Jajodia, P. Samarati, and M. Yung, Eds., Springer, 2020.
- [29] **M. Gomez-Barrero**, R. Tolosana, J. Kolberg, and C. Busch, "Multi-spectral short wave infrared sensors and convolutional neural networks for biometric presentation attack detection," in *Artificial Intelligence and Deep Learning in Biometric Security: Trends, Potential and Challenge*, G. Jaswal, V. Kanhangad, and R. Ramachandra, Eds., CRC Press-Taylor and Francis, 2020.
- [30] K. B. Raja, R. Raghavendra, S. Venkatesh, **M. Gomez-Barrero**, C. Rathgeb, and C. Busch, "A study of handcrafted and naturally learned features for fingerprint presentation attack detection," in *Handbook of Biometric Anti-Spoofing*, S. Marcel, M. S. Nixon, J. Fierrez, and N. Evans, Eds., 2019.
- [31] A. Morales, J. Fierrez, J. Galbally, and **M. Gomez-Barrero**, "An introduction to Iris Presentation Attack Detection," in *Handbook of Biometric Anti-Spoofing: Presentation Attack Detection*, S. Marcel, M. Nixon, J. Fierrez, and N. Evans, Eds., Springer, Aug. 2018.
- [32] J. Galbally and **M. Gomez-Barrero**, "Presentation attack detection in iris recognition," in *Iris and Periocular Biometrics*, C. Busch and C. Rathgeb, Eds., IET, Aug. 2017.
- [33] **M. Gomez-Barrero** and J. Galbally, "Inverse biometrics and privacy," in *User-Centric Privacy and Security in Biometrics*, C. Vielhauer, Ed., IET, Nov. 2017.
- [34] ———, "Software attacks on iris recognition systems," in *Iris and Periocular Biometrics*, C. Busch and C. Rathgeb, Eds., IET, Aug. 2017.

International Peer-Reviewed Conference Papers

- [35] L. J. Gonzalez-Soler, J. Patino, **M. Gomez-Barrero**, M. Todisco, C. Busch, and N. Evans, "Texture-based presentation attack detection for automatic speaker verification," in *Proc. Int. Workshop on Information Forensics and Security (WIFS)*, 2020.
- [36] L. J. Gonzalez-Soler, **M. Gomez-Barrero**, and C. Busch, "Embedded dense-bisif features for unknown face presentation attack detection," in *Proc. Int. Conf. of the Biometrics Special Interest Group (BIOSIG)*, 2020.
- [37] —, "Evaluating the sensitivity of face presentation attack detection techniques to images of varying resolutions," in *Proc. Norwegian Information Security Conf. (NISK)*, Submitted, 2020.
- [38] J. Kolberg, P. Drozdowski, **M. Gomez-Barrero**, C. Rathgeb, and C. Busch, "Efficiency analysis of post-quantum-secure face template protection schemes based on homomorphic encryption," in *Proc. Int. Conf. of the Biometrics Special Interest Group (BIOSIG)*, 2020.
- [39] J. Kolberg, A. C. Vasile, **M. Gomez-Barrero**, and C. Busch, "Analysing the performance of LSTMs and CNNs for fingerprint presentation attack detection," in *Proc. Int. Joint Conf. on Biometrics (IJCB)*, 2020.
- [40] J. Tapia-Farias, **M. Gomez-Barrero**, and C. Busch, "An efficient super-resolution single image network using sharpness loss metrics for iris," in *Proc. Int. Workshop on Information Forensics and Security (WIFS)*, 2020.
- [41] C. Busch, S. Caillebotte, U. Seidel, F. Knopjes, D. Maltoni, M. Ferrara, R. Veldhuis, L. Spreeuwers, K. Raja, R. Raghavendra, **M. Gomez-Barrero**, and C. Rathgeb, "Face morphing attacks: What needs to be done," in *Proc. Int. Conf. on Biometrics for Borders (ICBB)*, Frontex, 2019.
- [42] L. J. Gonzalez-Soler, **M. Gomez-Barrero**, L. Chang, J. Hernandez-Palancar, and C. Busch, "On the impact of different fabrication materials on fingerprint presentation attack detection," in *Proc. Int. Conf. on Biometrics (ICB)*, 2019.
- [43] J. Kolberg, P. Bauspieß, **M. Gomez-Barrero**, C. Rathgeb, M. Durmuth, and C. Busch, "Template protection based on homomorphic encryption: Computational efficient application to iris-biometric verification and identification," in *Proc. Int. Workshop on Information Forensics and Security (WIFS)*, 2019.
- [44] J. Kolberg, **M. Gomez-Barrero**, and C. Busch, "On multi-algorithm fingerprint presentation attack detection with laser speckle contrast imaging," in *Proc. Int. Conf. of the Biometrics Special Interest Group (BIOSIG)*, 2019.
- [45] **M. Gomez-Barrero** and C. Busch, "Multi-spectral convolutional neural networks for biometric presentation attack detection," in *Proc. Norwegian Information Security Conf. (NISK)*, 2019.
- [46] **M. Gomez-Barrero**, J. Kolberg, and C. Busch, "Multi-modal fingerprint presentation attack detection: Looking at the surface and the inside," in *Proc. Int. Conf. on Biometrics (ICB)*, 2019.
- [47] P. Drozdowski, S. Garg, C. Rathgeb, **M. Gomez-Barrero**, D. Chang, and C. Busch, "Privacy-preserving indexing of iris-codes with unlinkable and irreversible bloom filter-based search structures," in *Proc. European Conf. on Signal Processing (EUSIPCO)*, 2018.
- [48] P. Keilbach, J. Kolberg, **M. Gomez-Barrero**, and C. Busch, "Fingerprint presentation attack detection using laser speckle contrast imaging," in *Proc. Int. Conf. of the Biometrics Special Interest Group (BIOSIG)*, Sep. 2018.
- [49] A. Nautsch, S. Isadskiy, J. Kolberg, **M. Gomez-Barrero**, and C. Busch, "Homomorphic encryption for speaker recognition: Protection of biometric templates and vendor model parameters," in *Proc. Odyssey - The Speaker and Language Recognition Workshop*, Best Paper Award, Jun. 2018.
- [50] D. O. Roig, C. Rathgeb, **M. Gomez-Barrero**, A. Morales-Gonzalez, E. Garea-Llano, and C. Busch, "Visible wavelength iris segmentation: A multi-class approach using fully convolutional neuronal networks," in *Proc. Int. Conf. of the Biometrics Special Interest Group (BIOSIG)*, 2018.
- [51] U. Scherhag, D. Budhrani, **M. Gomez-Barrero**, and C. Busch, "Detecting morphed face images using facial landmarks," in *Proc. Int. Conf. on Image and Signal Processing (ICISP)*, Jul. 2018.

- [52] **M. Gomez-Barrero**, J. Kolberg, and C. Busch, "Towards fingerprint Presentation Attack Detection based on Short Wave Infrared Imaging and spectral signatures," in *Proc. Norwegian Information Security Conf. (NISK)*, 2018.
- [53] —, "Towards multi-modal finger presentation attack detection," in *Proc. Int. Workshop on Ubiquitous implicit Biometrics and health signals monitoring for person-centric applications (UBIO)*, Nov. 2018.
- [54] R. Tolosana, **M. Gomez-Barrero**, J. Kolberg, A. Morales, C. Busch, and J. Ortega, "Towards fingerprint presentation attack detection based on convolutional neural networks and short wave infrared imaging," in *Proc. Int. Conf. of the Biometrics Special Interest Group (BIOSIG)*, Sep. 2018.
- [55] J. Galbally, **M. Gomez-Barrero**, and A. Ross, "Accuracy evaluation of handwritten signature verification: Rethinking the random-skilled forgeries dichotomy," in *Proc. Int. Joint Conf. on Biometrics (IJCB)*, Oct. 2017.
- [56] L. J. Gonzalez-Soler, L. Chang, J. Hernandez-Palancar, A. P. Suarez, and **M. Gomez-Barrero**, "Fingerprint presentation attack detection method based on a bag-of-words approach," in *Proc. Iberoamerican Conf. on Pattern Recognition (CIARP)*, 2017.
- [57] U. Scherhag, A. Nautsch, C. Rathgeb, **M. Gomez-Barrero**, R. Veldhuis, L. Spreuwers, M. Schils, D. Maltoni, P. Grother, S. Marcel, R. Breithaupt, R. Raghavendra, and C. Busch, "Biometric systems under morphing attacks: Assessment of morphing techniques and vulnerability reporting," in *Proc. Int. Conf. of the Biometrics Special Interest Group (BIOSIG)*, 2017.
- [58] U. Scherhag, R. Ramachandra, K. B. Raja, **M. Gomez-Barrero**, C. Rathgeb, and C., "On the vulnerability and detection of digital morphed and scanned face images," in *Proc. Int. Workshop on Biometrics and Forensics (IWBF)*, Apr. 2017.
- [59] **M. Gomez-Barrero**, C. Rathgeb, K. B. Raja, R. Raghavendra, and C. Busch, "Biometric symmetry: Implications on template protection," in *Proc. European Signal Processing Conf. (EUSIPCO)*, Aug. 2017.
- [60] **M. Gomez-Barrero**, C. Rathgeb., U. Scherhag, and C. Busch, "Is your biometric system robust to morphing attacks?" In *Proc. Int. Workshop on Biometrics and Forensics (IWBF)*, Apr. 2017.
- [61] J. Galbally and **M. Gomez-Barrero**, "A review of iris anti-spoofing," in *Int. Workshop on Biometrics and Forensics (IWBF)*, Mar. 2016.
- [62] A. Morales, J. Fierrez, **M. Gomez-Barrero**, J. Ortega-Garcia, R. Daza, J. V. Monaco, J. C. J. Montalvao and, and A. George, "Kboc: keystroke biometrics ongoing competition," in *Proc. Int. Conf. on Biometrics: Theory, Applications, and Systems (BTAS)*, Sep. 2016.
- [63] M. Stokkenes, R. Ramachandra, K. Raja, **M. Gomez-Barrero**, M. Sigaard, and C. Busch, "Multi-biometric template protection on smartphones: An approach based on binarized statistical features and Bloom filters," in *Proc. Iberoamerican Conf. in Pattern Recognition (CIARP)*, Nov. 2016.
- [64] M. Stokkenes, M. K. Sigaard, K. B. Raja, R. Ramachandra, **M. Gomez-Barrero**, and C. Busch, "Multi-biometric template protection - a security analysis of binarized statistical features for Bloom filters on smartphones," in *Proc. Int. Conf. on Image Processing Theory, Tools and Applications (IPTA)*, Dec. 2016.
- [65] **M. Gomez-Barrero**, J. Galbally, and J. Fierrez, "Variable-length template protection based on Homomorphic Encryption with application to signature biometrics," in *Proc. Int. Workshop on Biometrics and Forensics (IWBF)*, Jun. 2016.
- [66] **M. Gomez-Barrero**, J. Galbally, E. Maiorana, P. Campisi, and J. Fierrez, "Implementation of fixed-length template protection based on Homomorphic Encryption with application to signature biometrics," in *Proc. IEEE Conf. on Computer Vision and Pattern Recognition Workshops (CVPRW)*, Jun. 2016, pp. 191–198.
- [67] C. Rathgeb, **M. Gomez-Barrero**, C. Busch, J. Galbally, and J. Fierrez, "Towards cancelable multi-biometrics based on adaptive Bloom filters: A case study on feature level fusion of face and iris," in *Proc. Int. Workshop on Biometrics and Forensics (IWBF)*, Mar. 2015.
- [68] **M. Gomez-Barrero**, J. Galbally, J. Fierrez, J. Ortega-Garcia, and R. Plamondon, "Enhanced on-line signature verification based on skilled forgery detection using sigma-lognormal features," in *Proc. Int. Conf. on Biometrics (ICB)*, May 2015.

- [69] M. Diaz-Cabrera, **M. Gomez-Barrero**, A. Morales, M. A. Ferrer, and J. Galbally, "Generation of enhanced synthetic off-line signatures based on real on-line data," in *Proc. Int. Conf. on Frontiers in Handwriting Recognition (ICFHR)*, Sep. 2014, pp. 482–487.
- [70] **M. Gomez-Barrero**, C. Rathgeb, J. Galbally, J. Fierrez, and C. Busch, "Protected facial biometric templates based on local gabor patterns and adaptive Bloom filters," in *Proc. Int. Conf. on Pattern Recognition (ICPR)*, Aug. 2014, pp. 4483–4488.
- [71] M. A. Ferrer, M. Diaz-Cabrera, A. Morales, J. Galbally, and **M. Gomez-Barrero**, "Realistic synthetic off-line signature generation based on synthetic on-line data," in *Proc. Int. Carnahan Conf. on Security Technology (ICCST)*, Oct. 2013, pp. 116–121.
- [72] J. Galbally, **M. Gomez-Barrero**, A. Ross, J. Fierrez, and J. Ortega-Garcia, "Securing iris recognition systems against masquerade attacks," in *Proc. SPIE Biometric and Surveillance Technology for Human and Activity Identification X, BSTHAI*, vol. 8712, May 2013.
- [73] **M. Gomez-Barrero**, J. Galbally, R. Plamondon, J. Fierrez, and J. Ortega-Garcia, "Variations of handwritten signatures with time: A sigma-lognormal analysis," in *Proc. Int. Conf. on Biometrics (ICB)*, Jun. 2013.
- [74] **M. Gomez-Barrero**, J. Galbally, J. Fierrez, and J. Ortega-Garcia, "Multimodal biometric fusion: A study on vulnerabilities to indirect attacks," in *Proc. Iberoamerican Conf. on Pattern Recognition (CIARP)*, Nov. 2013, pp. 358–365.
- [75] **M. Gomez-Barrero**, J. Gonzalez-Dominguez, J. Galbally, and J. Gonzalez-Rodriguez, "Security evaluation of i-vector based speaker verification systems against hill-climbing attacks," in *Proc. Interspeech*, Aug. 2013.
- [76] **M. Gomez-Barrero**, J. Galbally, J. Fierrez, and J. Ortega-Garcia, "Face verification put to test: A hill-climbing attack based on the uphill-simplex algorithm," in *Proc. Int. Conf. on Biometrics (ICB)*, Mar. 2012, pp. 40–45.
- [77] **M. Gomez-Barrero**, J. Galbally, A. Morales, M. A. Ferrer, J. Fierrez, and J. Ortega-Garcia, "Inverse biometrics: A case study in hand geometry authentication," in *Proc. Int. Conf. on Pattern Recognition (ICPR)*, Nov. 2012, pp. 1281–1284.
- [78] **M. Gomez-Barrero**, J. Galbally, P. Tome-Gonzalez, and J. Fierrez, "On the vulnerability of iris-based systems to software attacks based on genetic algorithms," in *Proc. Iberoamerican Congress on Pattern Recognition (CIARP)*, Springer LNCS-7441, Sep. 2012, pp. 114–121.
- [79] **M. Gomez-Barrero**, J. Galbally, J. Fierrez, and J. Ortega-Garcia, "Hill-climbing attack based on the uphill simplex algorithm and its application to signature verification," in *Proc. European Workshop on Biometrics and Identity Management (BioID)*, LNCS-6583, Mar. 2011, pp. 83–94.

Spanish Peer-Reviewed Conference Papers

- [80] R. Daza, A. Morales, J. Fierrez, **M. Gomez-Barrero**, and J. Ortega-Garcia, "Kboc: Plataforma de evaluación de tecnologías de reconocimiento biométrico basadas en la dinámica de tecleo," in *Proc. Symposium Nacional de la Unión Científica Internacional de Radio (URSI)*, Sep. 2016.
- [81] **M. Gomez-Barrero**, J. Galbally, J. Fierrez, and J. Ortega-Garcia, "Sobre cómo varían las firmas manuscritas con el tiempo: Una modelización sigma," in *Proc. Jornadas de Reconocimiento Biométrico de Personas*, Sep. 2013.
- [82] —, "Sobre las vulnerabilidades frente a ataques software basados en algoritmos genéticos de sistemas basados en iris," in *Proc. Jornadas de Reconocimiento Biométrico de Personas*, Jan. 2012.

Technical Reports

Contributions to Standards

- [83] N. Tekampe, A. Merle, J. Bringer, **M. Gomez-Barrero**, J. Fierrez, and J. Galbally, "D6.5: Towards the common criteria evaluations of biometric systems," in *BEAT: Biometrics Evaluation and Testing*, 2016.

Off-work

- Travelling worldwide
- Sports: Cross-country skiing, swimming, yoga
- Reading
- Real Madrid fan