Prof. Dr. Marta Gomez-Barrero

Curriculum Vitae

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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 (CRISP)*, 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 organisatorial privacy protection measures, 2nd Semester BSc on IT-Security and Privacy Protection, in German)
- Kryptographie (Cryptography, 2nd 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 authentiCaTion**, *Deutsche Forschungsgemeinschaft (DFG) and Agencie Nationale de la Recherche (ANR)*, (GO 2981/2-1), Partners: CRISP, EURECOM, Inria.

Funding for CRISP: 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), CRISP, Universiteit Twente.
Funding for CRISP: 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, CRISP and NTNU, TREX Enterprises, Northrop Grumman Corporation.
Funding for CRISP: 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 Cecabank*, 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..

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**

Further Talks

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.l 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, LaTeX, Subversion, GitHub

Other Merits

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 Comittee 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*
2016–2019 **Elsevier Pattern Recognition** *JCR = 3.399, Q1*
2014–2019 **IEEE Trans. on Information Forensics and Security** *JCR = 2.065, Q1*
2016 **MDPI AG Sensors** *JCR = 2.033, Q2*
2014–2018 **Elsevier Expert Systems with Applications** *JCR = 1.965, Q1*
2016 **MDPI AG Entropy** *JCR = 1.743, Q2*
2015–2016 **IEEE Trans. on Systems Man Cybernetics - Systems** *JCR = 1.699, Q2*
2015–2017 **Elsevier Pattern Recognition Letters** *JCR = 1.551, Q2*
2015–2018 **Elsevier Multimedia Tools and Applications** *JCR = 1.346, Q2*
2016 **IEEE Trans. on Learning Technologies** *JCR = 1.129, Q3*
2012–2019 **IET Biometrics** *JCR = 0.857, Q3*
2015 **IET Image Processing** *JCR = 0.753, Q3*
2015 **EURASIP Journal on Image and Video Processing** *JCR = 0.662, Q3*
2015 **IEICE Trans. Fundam. Electron. Commun. Comput. Sci.** *JCR = 0.231, Q4*
2015–2019 **EURASIP Journal on Information Security**

Journal Editor

2017 **Datenschutz und Datensicherheit**, *Schwerpunkt: Biometrie - Sicherheits- und DS-Konzepte*, English: Biometrics - Security and Privacy Concepts.

Organization of International Conferences

2018 **Special Session Chair at European Signal Processing Conf., EUSIPCO** *Rome, Italy*

2018 **Program Comm. Int. Conf. on Identity, Security and Behavior Analysis, ISBA** *Singapore*

2017 **Program Comm. European Signal Processing Conf., EUSIPCO** *Kos, Greece*

2017 **Program Comm. Int. Carnahan Conf. on Security Technology, ICCST** *Madrid, Spain*

2016–2019 **Program Committee BIOSIG** *Darmstadt, Germany*

2016 **Program Comm. Int. Conf. Image Proc. Theory, Tools and App., IPTA** *Oulu, Finland*

2015 **Program Committee Int. Conf. on Biometrics, ICB** *Phuket, Thailand*

2014 **Program Committee Int. Joint Conf. on Biometrics, IJCB** *Florida, USA*

2013 **Local Organizing Committee Int. Conf. on Biometrics, ICB** *Madrid, Spain*

Organization of International Competitions

2016 **Keystroke Biometrics Ongoing Competition (KBOC) at BTAS** *Buffalo, USA*

Peer Reviewed Publications

Journal Articles

[1] **M. Gomez-Barrero**, J. Kolberg, and C. Busch, "Fingerabdruck Prsentation Angriffe Erkennung: Aktueller Stand und offene Herausforderungen," *Datenschutz und Datensicherheit*, vol. 44, pp. 26–31, Jan. 2020.

[2] 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. 2020.

[3] 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 Trans. on Biometrics, Behavior, and Identity Science*, 2019, Submitted.

[4] 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.

[5] **M. Gomez-Barrero** and J. Galbally, "Reversing the irreversible: A survey on inverse biometrics," *Elsevier Computers & Security*, 2019.

[6] **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.

[7] **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.

[8] **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.

[9] 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.

[10] **M. Gomez-Barrero**, "Biometrie und Datenschutz," *Datenschutz und Datensicherheit, Gateway*, vol. 41, no. 7, p. 448, Jul. 2017.

[11] **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.

[12] **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.

[13] **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.

[14] **M. Gomez-Barrero** and H. Reimer, "Biometrie - die Herausforderungen bleiben!" *Datenschutz und Datensicherheit, Editorial*, vol. 41, no. 7, p. 397, Jul. 2017.

[15] 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.

[16] **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.

[17] 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.

[18] **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.

[19] **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.

[20] 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

[21] **M. Gomez-Barrero**, "Fingervein," in *Encyclopedia of Cryptography, Security and Privacy*, S. Jajodia, P. Samarati, and M. Yung, Eds., Springer, 2020, ch. Fingervein.

[22] 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., 2019.

[23] V. Krivokuca, **M. Gomez-Barrero**, S. Marcel, C. Rahtgeb, and C. Busch, "Towards measuring the amount of discriminatoryinformation in fingervein using a relative entropy estimator," in *Handbook of Vascular Biometrics*, A. Uhl, C. Busch, S. Marcel, and R. Veldhuis, Eds., Springer, 2019.

[24] 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.

[25] 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.

[26] 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.

[27] **M. Gomez-Barrero** and J. Galbally, "Inverse biometrics and privacy," in *User-Centric Privacy and Security in Biometrics*, C. Vielhauer, Ed., IET, Nov. 2017.

[28] ——, "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

[29] L. J. Gonzalez-Soler, **M. Gomez-Barrero**, and C. Busch, "Embedded dense-bsif features for unknown face presentation attack detection," in *Proc. Int. Joint Conf. on Biometrics (IJCB)*, Submitted, 2020.

[30] 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.

[31] 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.

[32] 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.

[33] **M. Gomez-Barrero** and C. Busch, "Multi-spectral convolutional neural networks for biometric presentation attack detection," in *Proc. Norwegian Information Security Conf. (NISK)*, 2019.

[34] **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.

[35] 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.

[36] 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.

[37] 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.

[38] 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.

[39] 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.

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Off-work

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