

Gómez Gómez Luis Felipe

Ph.D. in Computer and Telecommunication Engineering

Professional profile

Researcher in computer vision, face biometrics, and media forensics, with experience in biometric verification, presentation attack detection, deepfake analysis, and avatar generation. My work focuses on the security and applicability of biometric systems, with applications in healthcare, e-learning, online identity verification, and forensic analysis. I also have experience in AI-based video analysis, including markerless human motion analysis and biomechanical assessment from video.

Work Experience

- 2026 **Professor, AI: Machine Learning Foundations**, IE University, Madrid, Spain.
I was responsible for teaching an undergraduate course on artificial intelligence and machine learning foundations, introducing core concepts, methods, and practical tools for understanding and developing AI-based systems.
- 2024–2026 **Cátedra ENIA UAM-VERIDAS en IA Responsable**, Universidad Autónoma de Madrid.
As a researcher, I was investigating the challenges posed by digital attacks, specifically deepfakes, in face biometric systems. I was proposing measures to enhance the robustness and security of these systems.
- 2024 **Professor, Communications Electronics Laboratory**, Universidad Autónoma de Madrid.
I was responsible for providing instruction on communication electronics laboratory practices, with a particular focus on the design of analog microstrip filters, impedance matching, and the use of measurement equipment such as vector network analyzers.
- 2024 **Professor, Fundamentals of Wireless Devices and Electromagnetic Compatibility Laboratory**, Universidad Autónoma de Madrid, Madrid, Spain.
I was responsible for teaching computer-based laboratory practices related to fundamental concepts of electromagnetic compatibility, with a particular focus on radiated sources.
- 2023–2024 **HumanCAIC: Enhanced Behavioral Biometrics for Human-Centric AI in Context**, Universidad Autónoma de Madrid.
I was responsible for the development of cloud systems for artificial intelligence applications, as well as the creation of automatic biometric recognition algorithms.
- 2021–2023 **TRaining in Secure and PrivAcy-preserving biometrics - TReSPAsS-ETN, H2020 Marie Curie Initial Training Network**, Universidad Autónoma de Madrid.
As an early-stage researcher in the field of biometrics, behavior, and human-computer interaction, I explored three main areas of application for face biometrics: e-Health, e-Learning, and e-Banking.

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2020–2021 **Developer of face verification systems used in online education**, Universidad de Antioquia.

I was responsible for the development of deep learning-based face verification systems in a pilot project for virtual education classes supported by cloud platforms.

2019–2020 **Young researcher from MinCiencia**, Universidad de Antioquia.

As a young researcher, I was responsible for developing a platform to assist in the treatment and therapy of Parkinson's patients. My role involved providing feedback to patients on their current state of speech and facial expressions.

2018–2019 **Professor, Digital Signal Processing Laboratory**, Universidad de Antioquia.

I was responsible for providing instruction on computer practices related to basic signal processing, with a particular focus on signal preprocessing, Z-transform, Fourier transforms, the use of FIR filtering, and IIR filtering.

Research project participation

2025 **DeepFakesDB**, *Detecting Fraud in Facial Biometric Systems*, Universidad Autónoma de Madrid.

I was in charge of the development of a novel database composed of real and DeepFake videos in virtual meeting scenarios.

2022–2023 **VERIDAS-ANTISPOOFING**, *Detecting Fraud in Facial Biometric Systems*, Universidad Autónoma de Madrid.

I was in charge of the development of attack detection modules for facial recognition systems.

2020–2021 **VERIDAS-FACIAL-Q**, *Quality Measurement for Face Biometrics*, Universidad Autónoma de Madrid.

I was tasked with the development of quality detection modules for facial recognition systems.

Education

2020–2024 **Ph.D. in Computer and Telecommunication Engineering**, *Universidad Autónoma de Madrid*, Marie Skłodowska-Curie scholarship, Madrid-Spain.

Enhancing security and applicability in multimodal facial biometrics

2018–2020 **Master of Science**, *Universidad de Antioquia*, Antioquia-Colombia.

Análisis de arquitecturas de aprendizaje profundo para el modelamiento de rostro y expresiones faciales

2012–2018 **Telecommunication Engineer**, *Universidad de Antioquia*, Antioquia-Colombia.

Verificación biométrica de identidad usando reconocimiento de rostros y patrones de teclado

Publications

- 2025 L. Pedrouzo-Rodriguez, P. Delgado-DeRobles, L.F. Gomez, R. Tolosana, R. Vera-Rodriguez, A. Morales, and J. Fierrez, **Is It Really You? Exploring Biometric Verification Scenarios in Photorealistic Talking-Head Avatar Videos**. Accepted in *Proc. of IEEE/IAPR Intl. Joint Conf. on Biometrics (IJCB)*, September 2025.
- 2025 L.F. Gomez, G. Garrido-Lopez, J. Fierrez, A. Morales, R. Tolosana, J. Rueda, and E. Navarro, **Comparison of Visual Trackers for Biomechanical Analysis of Running**. In *IEEE Intl. Conf. on Automatic Face and Gesture Recognition Workshops (FGw)*, August 2025.
- 2025 G. Garrido-Lopez, L.F. Gomez, J. Fierrez, A. Morales, R. Tolosana, J. Rueda, and E. Navarro **VideoRun2D: Cost-Effective Markerless Motion Capture for Sprint Biomechanics**. In *IAPR International Conference on Pattern Recognition Workshop (ICPRw)*, April 2025.
- 2025 I. DeAndres-Tame, R. Tolosana, P. Melzi, R. Vera-Rodriguez, M. Kim, C. Rathgeb, X. Liu, L.F. Gomez, A. Morales, et al, **Second FRCSyn-ongoing: Winning solutions and post-challenge analysis to improve face recognition with synthetic data**. In *Information Fusion*, vol. 120, pp. 103099, March 2025.
- 2024 R. Daza, L.F. Gomez, J. Fierrez, A. Morales, R. Tolosana and J. Ortega-Garcia **DeepFace-Attention: Multimodal Face Biometrics for Attention Estimation With Application to e-Learning**. In *IEEE Access*, vol. 12, pp. 111343-111359, 2024, August 2024.
- 2023 R. Daza, A. Morales, R. Tolosana, L.F. Gomez, and J. Fierrez, and J. Ortega-Garcia **edBB-Demo: Biometrics and Behavior Analysis for Online Educational Platforms**. In *Proceedings of the AAAI Conference on Artificial Intelligence*, September 2023.
- 2023 L.F. Gomez, J. Fierrez, A. Morales, M. Ghafourian, R. Tolosana, I. Solano, A. Garcia, and F. Zamora-Martinez. **PAD-Phys: Exploiting Physiology for Presentation Attack Detection in Face Biometrics**. In *2023 IEEE 47th Annual Computers, Software, and Applications Conference (COMPSAC)*, June 2023.
- 2023 M. Ghafourian, J. Fierrez, L.F. Gomez, R. Vera-Rodriguez, A. Morales, Z. Rezgui and R. Veldhuis. **Toward Face Biometric De-identification using Adversarial Examples**. In *2023 IEEE 47th Annual Computers, Software, and Applications Conference (COMPSAC)*, June 2023.
- 2023 L.F. Gomez, A. Morales, J. Fierrez and J.R. Orozco-Arroyave. **Exploring facial expressions and action unit domains for Parkinson detection**. In *Plos one*, 18(2), e0281248, February 2023.
- 2023 R. Daza, L.F. Gomez, A. Morales, J. Fierrez, R. Tolosana, R. Cobos and J. Ortega-Garcia. **MATT: Multimodal Attention Level Estimation for e-learning Platforms**. In *AAAI Workshop*, January 2023.
- 2022 Nestor R. Calvo-Ariza, L.F. Gomez and J.R. Orozco-Arroyave. **Classical FE Analysis to Classify Parkinson's Disease Patients**. In *Electronics*, 11(21), 3533 October 2022.

- 2022 J. Hernandez-Ortega, J. Fierrez, L.F. Gomez and A. Morales. **FaceQvec: Vector Quality Assessment for Face Biometrics based on ISO Compliance.** In *IEEE/CVF Winter Conf. on Applications of Computer Vision Workshops (WACVw)* January 2022.
- 2021 L.F. Gomez, A. Morales, J.R. Orozco-Arroyave, R. Daza and J. Fierrez. **Improving Parkinson Detection using Dynamic Features from Evoked Expressions in Video.** In *IEEE/CVF Conf. on Computer Vision and Pattern Recognition Workshops (CVPRw)*, June 2021.
- 2020 J.R. Orozco-Arroyave, J.C. Vásquez-Correa, P. Klumpp, P.A. Pérez-Toro, D. Escobar-Grisales, and N. Roth, C.D. Ríos-Urrego, M. Strauss, H.A. Carvajal-Castaño, S. Bayerl, L.R. Castrillón-Osorio, T. Arias-Vergara, A. Kunderle, F.O. López-Pabón, L.F. Parra-Gallego, B. Eskofier, L.F. Gomez, M. Schuster, and E. Nöth. **Apkinson: the smartphone application for telemonitoring Parkinson's patients through speech, gait and hands movement.** In *Neurodegenerative Disease Management* 10(3):137-157,2020.