

# Ignacio de la Serna

(Publish as Ignacio Serna)  
Independent AI Researcher

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(Last update: 2026.01)

## EDUCATION

<b>CALIFORNIA INSTITUTE OF TECHNOLOGY</b> <i>Visiting Student (Ph.D) Researcher</i> ○ Advisors: Pietro Perona	<b>Pasadena, CA, U.S.A.</b> 2022 - 2023
<b>AUTONOMOUS UNIVERSITY OF MADRID</b> <i>Doctor of Philosophy in Science in Electrical Engineering and Computer Science (Ph.D)</i> ○ Advisors: Aythami Morales (primary) and Javier Ortega-Garcia (secondary) ○ Dissertation: “ <i>Understanding Bias at Multiple Levels in Computer Vision Algorithms with a focus on Face Recognition</i> ”	<b>Madrid, Spain</b> 2020 – 2024
<b>NATIONAL UNIVERSITY OF DISTANCE EDUCATION</b> <i>Master of Science in Artificial Intelligence</i>	<b>Madrid, Spain</b> 2018 - 2020
<b>AUTONOMOUS UNIVERSITY OF MADRID</b> <i>Bachelor of Science in Mathematics</i> <i>Bachelor of Science in Computer Science</i>	<b>Madrid, Spain</b> 2012 – 2018 2012 – 2018

## WORK EXPERIENCES – ACADEMIA

<b>MAX PLANCK INSTITUTE FOR HUMAN DEVELOPMENT</b> Visiting Researcher, Center for Humans and Machines Post-doctoral Researcher, Center for Humans and Machines	<b>Berlin, Germany</b> 2026.02 – present 2024.02 – 2026.01
<b>IE UNIVERSITY</b> Adjunct Professor, School of Science and Technology	<b>Madrid, Spain</b> 2026.01 – present
<b>AUTONOMOUS UNIVERSITY OF MADRID</b> Pre-doctoral Researcher, Biometrics and Data Pattern Analytics (BiDA) Lab	<b>Madrid, Spain</b> 2019.02 – 2020.08

## WORK EXPERIENCES -- INDUSTRY

<b>GMV AEROSPACE AND DEFENCE S.A.</b> GNSS (Global Navigation Satellite Systems) Junior Engineer Research Trainee	<b>Madrid, Spain</b> 2018.02 – 2018.09 2017.10 – 2018.02
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## HONORS & DISTINCTIONS

2026 Open Philanthropy / Coefficient Giving Grant for Technical AI Safety Research (\$150,000)  
2020 FPI (pre-doctoral contracts Research Staff Training) scholarship of the Autonomous University of Madrid

## TALKS & SEMINARS

### Invited Talk | IMDEA Software Institute

Madrid Institute for Advanced Studies | Madrid, Spain | January 2026

Topic: “*Bias in Deep Face Models*”

### Short Course | Master’s Program in Artificial Intelligence

Technical University of Madrid, Spain | June 2025

Topic: “*Machine Behavior and Machine Culture*”

### Invited Talk | Fairness in Biometric Systems Workshop

International Conference of Pattern Recognition (ICPR) | Montreal, Canada | August 2022

Topic: “*Where are we on measuring bias?*”

### Tutorial | European Union H2020 Secure and Privacy-preserving Biometrics Summer School

Autonomous University of Madrid, Spain | July 2022

Topic: “*Hands-on: NLP Tools*”

## WORK UNDER REVIEW

- **I. Serna** (2025). “Discovering Intersectional Bias via Directional Alignment in Face Recognition Embeddings”. Under review in International Conference.
- H. Yakura, E. Lopez-Lopez, L. Brinkmann, **I. Serna**, P. Gupta, and I. Rahwan. “Empirical evidence of Large Language Model's influence on human spoken communication”, *Under review in Nature*.
- **I. Serna**, A. Morales, and J. Fierrez. “Unraveling Machine Behavior by Multi-Level Bias Analysis and Detection: Methodology and Application to Face Biometrics”, *Under review in Pattern Recognition*.

## PUBLICATIONS

### REFEREED JOURNALS AND CONFERENCE PAPERS

(Google Scholar [link](#))

1. H. Yakura, E. Lopez-Lopez, L. Brinkmann, **I. Serna**, P. Gupta, I. Soraperra, T. F. Eisenmann, I. Rahwan (April 2026). “Empirical Evidence of a Bi-Directional Linguistic Interaction between Humans and Machines”, *International Conference on the Evolution of Language (EVOLANG)*, Plovdiv, Bulgaria.
2. A.H. Artilles, H. Yakura, L. Brinkmann, M.C. Sola, H.A. Alhaija, **I. Serna**, N. Rahaman, B. Schölkopf, I. Rahwan (Dec 2025). “Cultural Alien Sampler: Open-ended art generation balancing originality and coherence”, *Advances in Neural Information Processing Systems (NeurIPS), Creative AI Track*, San Diego, CA, USA.
3. M. Knott, **I. Serna**, E. Mann and P. Perona (Feb 2025). “A Rapid Test for Accuracy and Bias of Face Recognition Technology”, in *IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV)*, Tucson, AZ, USA.
4. A. Hernandez, L. Brinkmann, **I. Serna**, I., N. Rahaman, H.A. Alhaija, H. Yakura, M.C. Sola, B. Schölkopf and I. Rahwan (Dec 2024). “Alien Recombination: Exploring Concept Blends Beyond Human Cognitive Availability in Visual Art”, in “*Workshop on Creativity & Generative AI.*” *Proceedings of the Neural Information Processing Systems (NeurIPS)*, Montreal, Canada.

5. A. Peña, A. Morales, J. Fierrez, **I. Serna**, J. Ortega-Garcia, I. Puente, J. Cordova and G. Cordova (Aug 2023). “Leveraging Large Language Models for Topic Classification in the Domain of Public Affairs”, in *IAPR Intl. Conf. on Document Analysis and Recognition (ICDAR) Workshops*, San José, CA, USA.
6. A. Peña, **I. Serna**, A. Morales, J. Fierrez, A. Ortega, A. Herrarte, M. Alcantara & J. Ortega-Garcia (Jun 2023). “Human-Centric Multimodal Machine Learning: Recent Advances and Testbed on AI-Based Recruitment”. *SN Computer Science*, 2023, vol. 4, no 5, p. 434.
7. M. Ghafourian, J. Fierrez, R. Vera-Rodriguez, A. Morales and **I. Serna** (June 2023). “OTB-morph: One-time Biometrics via Morphing”. *Machine Intelligence Research*, vol.20 no.6, pp 855-871. ISSN: 2731-5398.
8. D. DeAlcala, **I. Serna**, A. Morales, J. Fierrez, and J. Ortega-Garcia (June 2023). “Measuring bias in AI models: A statistical approach introducing N-Sigma”, in *IEEE Conf. on Computers, Software, and Applications (COMPSAC)*, Torino, Italia.
9. **I. Serna**, A. Morales, J. Fierrez and N. Obradovich, (April 2022). “SensitiveLoss: Improving Accuracy and Fairness of Face Representations with Discrimination-Aware Deep Learning”, *Artificial Intelligence*, vol. 305.
10. A. Morales, J. Fierrez, A. Acien, R. Tolosana and **I. Serna**, (Feb 2022). “SetMargin Loss applied to Deep Keystroke Biometrics with Circle Packing Interpretation”, *Pattern Recognition*, vol. 122.
11. **I. Serna**, D. DeAlcala, A. Morales, J. Fierrez, J. Ortega-Garcia, (Feb 2022) “IFBiD: Inference-Free Bias Detection”, in *AAAI Workshop on Artificial Intelligence Safety (SafeAI)*, Vancouver, Canada.
12. M. Ghafourian, J. Fierrez, R. Vera-Rodriguez, **I. Serna** and A. Morales, (Jan 2022). “OTB-morph: One-Time Biometrics via Morphing applied to Face Templates”, in *IEEE/CVF Winter Conf. on Applications of Computer Vision Workshops (WACVw)*, Waikoloa, HI, USA.
13. J. Hernandez-Ortega, J. Fierrez, **I. Serna** and A. Morales, (Dec 2021). “FaceQgen: Semi-Supervised Deep Learning for Face Image Quality Assessment”, in *IEEE Intl. Conf. on Automatic Face and Gesture Recognition (FG)*, Jodhpur, India.
14. A. Peña, **I. Serna**, A. Morales, J. Fierrez and A. Lapedriza, “Facial Expressions as a Vulnerability in Face Recognition”, in *IEEE Intl. Conf. on Image Processing (ICIP)*, Anchorage, Alaska, USA, September 2021, pp. 2988-2992.
15. **I. Serna**, A. Peña, A. Morales and J. Fierrez, (Jan 2021). “InsideBias: Measuring Bias in Deep Networks and Application to Face Gender Biometrics”, in *IAPR Intl. Conf. on Pattern Recognition (ICPR)*, Milan, Italy.
16. A. Peña, **I. Serna**, A. Morales and J. Fierrez, (Oct 2020). “FairCVtest Demo: Understanding Bias in Multimodal Learning with a Testbed in Fair Automatic Recruitment”, in *ACM Intl. Conf. on Multimodal Interaction (ICMI)*, Utrecht, The Netherlands. (also presented at ECCV 2020).
17. A. Peña, **I. Serna**, A. Morales and J. Fierrez, (June 2020). “Bias in Multimodal AI: Testbed for Fair Automatic Recruitment”, in *IEEE/CVF Conf. on Computer Vision and Pattern Recognition Workshops (CVPRw)*, Seattle, USA. (also presented at ICML 2020 Workshop on Human-in-the-Loop Learning).
18. **I. Serna**, A. Morales, J. Fierrez, M. Cebrian, N. Obradovich and I. Rahwan, (Feb 2020). “Algorithmic Discrimination: Formulation and Exploration in Deep Learning-based Face Biometrics”, in *AAAI Workshop on Artificial Intelligence Safety (SafeAI)*, New York, USA.

## CONFERENCE ORGANIZING COMMITTEE

### CONFERENCE ORGANIZING COMMITTEE

- Member of Organizing Committee, IEEE / IAPR International Conference on Biometrics (ICB), 2013.
- Member of Organizing Committee, IAPR Iberian Conference on Pattern Recognition and Image Analysis (IbPRIA), 2019.

## REVIEWER

- Journals:
  - IEEE Transactions on Image Processing
  - IEEE Open Journal of Signal Processing
  - IEEE Transactions on Information Forensics & Security
  - IEEE Transactions on Biometrics, Behavior, and Identity Science
  - Applied Soft Computing (Elsevier)
  - Collective Intelligence (Sage and ACM)
  - The Computer Journal (British Computer Society)
  - PLOS ONE
  - Nature Communications Psychology / Scientific Reports
  - Springer Nature AI & SOCIETY
- Conferences:
  - Computer Vision and Pattern Recognition Conference (CVPR)
  - European Conference on Computer Vision (ECCV)
  - Conference on Neural Information Processing Systems (NeurIPS)
  - International Conference on Learning Representations (ICLR)
  - International Joint Conference on Biometrics (IJCB)

## PROJECT PARTICIPATION

### COMPETITIVE PUBLIC PROJECTS

**Project Title:** HumanCAIC - Enhanced Behavioral Biometrics for Human-Centric AI in Context (TED2021-131787B-I00).

*Funding Entity:* European Union - NextGenerationEU Funds.

*Amount Funded:* 314,000 €.

*Duration:* September 2022 - August December 2024.

*Principal Investigators:* Julian Fierrez and Aythami Morales.

*Description:* Development and study of new human-centered learning strategies.

**Project Title:** BBforTAI: Biometrics and Behavior for Unbiased and Trustworthy AI with Applications (PID2021-127641OB-I00)

*Funding Entity:* Spanish Ministry of Economic Affairs and Digital Transformation.

*Amount Funded:* 273.000€.

*Duration:* January 2022 - December 2024.

*Principal Investigators:* Aythami Morales and Julián Fierrez.

*Description:* Development of new reliable machine learning technologies with applications based on biometric and behavioral modeling.

**Project Title:** BIBECA: Biometric Recognition and Behavior Analysis for a Safe and Context Sensitive Human-Machine Interaction (RTI2018-101248-B-I00R)

*Funding Entity:* Spanish Ministry of Economic Affairs and Digital Transformation.

*Amount Funded:* 240.000€.

*Duration:* January 2019 - December 2021.

*Principal Investigators:* Aythami Morales and Julián Fierrez.

*Description:* Development of new biometric recognition technologies based on behavior.

## TECHNOLOGY TRANSFER PROJECTS TO PRIVATE SECTOR

**Project Title:** Detecting Fraud in Facial Biometric Systems.

*Funding Entity:* VERIDAS.

*Duration:* March 2022 - November 2022.

*Amount Funded:* 48,200€.

*Principal Investigator:* Aythami Morales Moreno.

*Work performed:* Development of attack detection modules in facial recognition systems.

**Project Title:** VINCESAI-ARGOS: Development of a Politics Intelligence Platform.

*Funding Entity:* Vinces Consulting.

*Duration:* October 2021 - November 2022.

*Amount Funded:* 25,380€.

*Principal Investigator:* Aythami Morales Moreno.

*Work performed:* Development of a platform for information source analysis and massive text processing.

**Project Title:** CECA-Analytics.

*Funding Entity:* Cecabank S.A..

*Duration:* October 2016 - September 2021,

*Amount Funded:* confidential (>200.000€).

*Principal Investigator:* Javier Ortega-García.

## TEACHING

### IE UNIVERSITY

*CSAI.2.M.B: AI: Machine Learning Foundations*

- Spring 2026, Enrollment: 40

### AUTONOMOUS UNIVERSITY OF MADRID

*EE446: Signal Analysis and Information Modeling (Undergraduate)*

- Spring 2022, Enrollment: 40, Teaching Assistant (co-instructor: Javier Ortega-García)

*EE52: Biometric Recognition (Masters)*

- Spring 2022, Enrollment: 20, Teaching Assistant (co-instructor: Javier Ortega-García)

*University Program for Seniors*

- November 2023, Enrollment: 50, Instructor (co-instructor: Aythami Morales)

## **ADVISEES**

### MASTER STUDENTS

2023 – 2024	Alejandro Hernandez Artiles (CS, Technische Universität München)
2022 – 2023	Sofia Bosch Pastor (EE, Autonomous University of Madrid)
2020 – 2021	Alejandro Romero del Campo (EE, Autonomous University of Madrid)

### UNDERGRADUATE STUDENTS

2022 – 2023	Javier Culebras Martínez (CS, Autonomous University of Madrid)
2021 – 2022	Rosa Hornero Romera (EE, Autonomous University of Madrid)

## **ADDITIONAL INFORMATION**

Languages: Spanish, English, Italian