

Maria C. Escobar

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[Webpage](#) | [Linkedin](#) | [Github](#) | [Google Scholar](#)

PROFESSIONAL SUMMARY

I am a PhD candidate in Engineering with a strong background in Artificial Intelligence and Computer Vision. My expertise is in applied research, focusing on developing and deploying Artificial Intelligence solutions for embodied systems and human-centered applications. I have extensive experience building projects from the ground up, including medical applications, dataset creation, egocentric video analysis, and pose estimation. I am passionate about using AI to address real-world challenges.

EDUCATION

- PhD., Engineering**, Universidad de los Andes *2021-2024*
Thesis: 3D Human Pose Estimation from Egocentric Inputs
Published in leading conferences: CVPR, WACV, MICCAI.
- MSc., Biomedical Engineering**, Universidad de los Andes *2019-2020*
Thesis: Generative Adversarial Networks for Robust Medical Image Analysis.
Led four large-scale medical AI projects.
- BSc., Biomedical Engineering**, Universidad de los Andes *2015-2018*
Minor: German Language and culture.
Best GPA in graduating cohort.

RESEARCH EXPERIENCE

3D Human pose estimation

- Led a research project focused on estimating 3D human poses from sparse inputs, such as head and hand trajectories, enhanced with egocentric video data. This work pushed the boundaries of embodied AI by leveraging state-of-the-art methods for motion synthesis and pose estimation.
- **Relevant publications:** [EgoCast](#), [Bodiffusion](#), [Ego-Exo4D](#)

Egocentric Video understanding

- Team leader for the EgoExo4D project in collaboration with Meta's FAIR and 14 global universities. I oversaw the collection of over 200 hours of egocentric video data and developed baselines for egocentric pose estimation. This work bridges first- and third-person perspectives to advance understanding of skilled human activities.
- **Relevant publications:** [Ego-Exo4D](#), [EgoCOL](#), [VideoSwin Transformers for Egocentric video](#).

Artificial Intelligence for social good

- Led four large-scale medical AI projects aimed at addressing healthcare challenges, including COVID-19 rapid testing, congenital heart defect detection, bone age assessment, and lung cancer diagnosis. These projects combined cutting-edge AI techniques with practical implementation to make a tangible societal impact.
- **Relevant publications:** [Smart Pooling](#), [BoNet](#), [UltraGAN](#).

PROFESSIONAL EXPERIENCE

Research Intern - Google

May, 2024 - Sept 2024

- Implemented machine learning models for pose estimation in **Project Starline**, a novel telepresence system.
- Optimized pose estimation algorithms using JAX and FLAX on Google's infrastructure for scalable deployment and evaluation.
- Designed and conducted performance evaluations, driving improvements in accuracy and system robustness.
- Collaborated with multidisciplinary teams and presented findings to technical and non-technical stakeholders.

Graduate Researcher - CINFONIA

Aug, 2018 - May, 2024

- Conducted computer vision research across biomedical imaging and real-world applications.
- Led research proposals and secured funding for high-impact projects.
- Mentored students in research methodologies and technical problem-solving.

- Published papers in top-tier conferences and workshops.
- Collaborated with multidisciplinary teams to design innovative solutions.

Teaching Assistant - Universidad de los Andes

Aug 2016 – Aug 2019

- Taught and assisted courses in biomedical imaging, programming, statistics, and physiology, engaging over 50 students per term.
- Designed and graded assignments, laboratory guides, and exams to enhance student learning.
- Mentored students on final projects, providing technical guidance and promoting critical thinking skills.

PUBLICATIONS

- EgoCast: Forecasting Egocentric Human Pose in the Wild. **M. Escobar**, J. Puentes, C. Forigua, J. Pont-Tuset, KK. Maninis, P. Arbeláez. WACV, 2025.
- Ego-Exo4D: Understanding Skilled Human Activity from First- and Third-Person Perspectives. K. Grauman **et al.** CVPR, 2024 Oral presentation.
- BoDiffusion: Diffusing Sparse Observations for Full-Body Human Motion Synthesis. A. Castillo*, **M. Escobar***, G. Jeanneret, A. Pumarola, P. Arbeláez, A. Thabet, A. Sanakoyeu. CV4Metaverse @ ICCV, 2023.
- EgoCOL: Egocentric Camera pose estimation for Open-world 3D object Localization@ Ego4D challenge 2023. C Forigua, **M Escobar**, J Pont-Tuset, KK Maninis, P Arbeláez. Arxiv, 2023.
- SuperFormer: Volumetric Transformer Architectures for MRI Super-Resolution. C. Forigua, **M. Escobar**, P. Arbeláez. SASHIMI @ MICCAI, 2022.
- Video Swin Transformers for Egocentric Video Understanding @ Ego4D Challenges 2022. **M. Escobar***, L. Daza*, C. González, J. Pont-tuset, P. Arbeláez. Arxiv, 2022.
- Smart pooling: AI-powered COVID-19 informative group testing. **M. Escobar**, G. Jeanneret, L. Bravo-Sánchez, et al. Scientific Reports, 2022.
- Generalized Real-World Super-Resolution through Adversarial Robustness. A. Castillo*, **M. Escobar***, A. Romero, R. Timofte, L. Van Gool, P. Arbeláez. AIM @ ICCV, 2021.
- SIMBA: Specific Identity Markers for Bone Age Assessment. C. González*, **M. Escobar***, L. Daza, F. Torres, G. Triana, and P. Arbeláez. MICCAI, 2020.
- LUCAS: LUng CAnCer Screening with Multimodal Biomarkers. L. Daza, A. Castillo, **M. Escobar**, and P. Arbeláez. MICCAI, 2020.
- UltraGAN: Ultrasound Enhancement Through Adversarial Generation. **M. Escobar***, A. Castillo*, A. Romero and P. Arbeláez. SASHIMI @ MICCAI, 2020.
- Hand Pose Estimation for Pediatric Bone Age Assessment. **M. Escobar***, C. González*, F. Torres, L. Daza, G. Triana and P. Arbeláez. MICCAI, 2019 Oral presentation.
- An empirical study on Global Bone Age Assessment. F. Torres, C. González, **M. Escobar**, L. Daza, G. Triana and P. Arbeláez. SIPAIM, 2019.

AWARDS

- 2nd place in Visual Queries 3D Localization for Ego4D Challenges @ CVPR (2023)
- 2nd place in PNR and 3rd place in Object State Change for Ego4D Challenges @ CVPR (2022)
- Best GPA of graduating cohort of Biomedical Engineering students (2019).
- First place in the graduate national exams for Biomedical Engineering (2018).

SKILLS

Programming: Python, PyTorch, Matlab, JAX, FLAX, Html.

Languages: Spanish (Native), English (C2), German (B1).

COMMUNITY SERVICE

Volunteer reviewer CVPR, ECCV, ICCV, MICCAI, NeurIPs TPAMI and IJCV

Organizing committee SASHIMI 2022 at MICCAI