Carlos Jiménez Farfán

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EDUCATION

- **Universitat Politècnica de Catalunya (UPC)** — *2024 - 2026 (Expected)*
  M.Sc. in Artificial Intelligence — Barcelona, Spain
- **Escuela Superior Politécnica del Litoral (ESPOL)** — *2018 - 2023*
  B.Sc. (Eng) in Computer Science — Guayaquil, Ecuador
  ◦ Grade: 9.10/10.00

RESEARCH EXPERIENCE

- **Institut de Robòtica i Informàtica Industrial (IRI)** — *Sep 2025 - Present*
  Graduate Researcher — Barcelona, Spain
  ◦ **JAE Intro ICU scholarship**
    * Advised by **Dr. Júlia Borràs**
    * Investigate robust and occlusion-aware methods for cloth state estimation in long-horizon robotic manipulation (*e.g.,* **Graph Neural Networks (GNNs)**, **Diffusion Models**).
    * Evaluate on **UR5** (bimanual) and **Franka Emika Research 3 (FR3)** physical robot arms.
  ◦ **Introduction to Research (I2R) course**
    * Advised by **Dr. David Blanco-Mulero**
    * Research on **Vision-Language-Action (VLA)** models leveraging **latent variable models** and **Flow-Matching** frameworks to enhance generalization and compositional skill learning in robotic manipulation.
    * Evaluate on the different benchmarks (e.g. **LIBERO**) and on **FR3** physical robot arm.

- **UNITH.AI** — *Jul 2025 - Dec 2025*
  AI Researcher - 6 month internship — Barcelona, Spain
  ◦ Contributed to an applied research project aimed at improving real-time audio-driven lip-sync systems based on **latent diffusion models**, reference paper LatentSync.
  ◦ Investigated the use of **Flow-Matching (e.g. Rectified-Flow) models** for improving sampling efficiency and video quality at inference.

- **Fundaciò Bosch i Gimpera (Universitat de Barcelona)** — *Mar 2025 - Jul 2025*
  Graduate Research Assistant - Fellowship — Barcelona, Spain
  ◦ Fellowship awarded to work as part of the Artificial Intelligence and Bio-Medical Applications (AIBA) research group advised by **Prof. Petia Radeva**.
  ◦ Co-organized the VLM MetaFood Challenge Dishcovery - **CVPR 2025**.
  ◦ Assisted and conducted research on Parameter-Efficient Fine-Tuning (PEFT), Volume Estimation using diffusion-based 3D generative models and benchmarking novel NeRF models.

- **Institut de Robòtica i Informàtica Industrial (IRI)** — *Oct 2024 - Mar 2025*
  Robotics Research Engineer — Barcelona, Spain
  ◦ Funded by the INIREC scholarship to work in the SmartGaze Project advised by **Dr. Jordi Sánchez Riera**.
  ◦ Investigated, implemented and tested of novel Deep Learning (DL) based Visual SLAM and Visual Odometry algorithms, to improve aided street navigation.

- **Bioinformatics and Autonomous Learning Lab - ESPOL** — *May 2023 - Sep 2024*
  Robotics Researcher - Founding Member — Guayaquil, Ecuador
  ◦ Advised by **Prof. Edwin Valarezo**
  ◦ Lead the Autonomous Driving (AD) research focused on end-to-end learning (Deep Reinforcement Learning (RL) and Imitation Learning (IL)).
  ◦ Supervised Human-Robot interaction and Robot Learning projects (e.g. RL/IL for Robot Manipulation).

- *AI In Health* **Research Group - ESPOL** — *Jan 2023 - Dec 2023*
  Research Technician — Guayaquil, Ecuador
  ◦ Advied by **Prof. Enrique Peláez** and **Prof. Francis R. Loayza**
  ◦ Contributed to research, experiments and publications regarding Artificial Intelligence techniques applied to healthcare (Parkinson Disease, Brain Tumors, among others) using SOTA DL models.
  ◦ Developed custom variations of Multimodal models using CNNs, Transformers, GNNs and adapted them for medical records and imaging processing.

SELECTED PUBLICATIONS C=Conference, J=Journal, P=Patent, S=In Submission, T=Thesis

* Denotes equal contribution.

[S.1] A. AlMughrabi*, G. Rivo*, **C. Jiménez-Farfán***, U. Harron*, F. Al-Areqi, H. Jung, B. Busam, R. Marques, and P. Radeva. (2026). **BenchSeg: A Large-Scale Dataset and Benchmark for Multi-View Food Video Segmentation**. Submitted to *Expert Systems with Applications, under review*.

[S.2] **C. Jiménez-Farfán***, A. Constantine, E. Pelaez, A. Tapia-Rosero, E. Valarezo, I. Obeso, A. Briones-Chonillo, M.J. Miranda, L. Yepez-Guerra, F. R. Loayza (2025). **Explainable 3D Vision Transformer Framework for Detecting Brain Anomalies in Neuropsychiatric Subtypes of Parkinsons Disease**. Submitted to *NeuroImage, under review*.

[C.1] **C. J. Farfán***, A. B. Chonillo, A. Constantine, E. Valarezo, F. R. Loayza and E. P. Jarrín, (2024). **A Sharper Look: Edge Detection and Light-Weight 3D Vision Transformers for Parkinsonian Disorder Classification on MRI Imaging**. In *IEEE ANDESCON*, pp. 01-06. Cusco, Perú.

[C.2] **C. J. Farfán***, F. Sánchez, E. Villa, J. A. Rodríguez-Vásquez, C. Helguero and F. R. Loayza, (2024). **Portable Colposcopic Device Based On Artificial Intelligence**. In *IEEE ANDESCON*, pp. 01-06. Cusco, Perú.

[J.1] Núñez Montoya, B.; Valarezo Añazco, E.; Guerrero, S.; Valarezo-Añazco, M.; Espin-Ramos, D; **Jiménez-Farfán, C***. (2023). **Myo Transformer Signal Classification for an Anthropomorphic Robotic Hand**. *Prosthesis*, Vol. 5, Issue 4, pp. 1287-1300.

SELECTED TALKS & CONFERENCE PRESENTATIONS

• **The role of Deep Learning in Self-Driving Cars** — 2023
Road to DevFest - Google Developers Group Guayaquil

• **Detection and Segmentation of Lesions in Medical Images using Deep Learning** — 2023
International Conference in Artificial Intelligence Applications (CINTIA)

• **Designing Deep Learning Models for Pattern Recognition in Medical Images** — 2023
International Conference on Pattern Recogntion Systems (Workshop)

HONORS AND AWARDS

• **JAE Intro ICU Scholarship** *- CSIC (€4800)* — 2025
• **JAE Intro Scholarship** *- CSIC (€4200)* [†] — 2025
• **IRI Summer Internship** *- CSIC (€2400)* [†] — 2025
• **INIREC Scholarship** *- IRI-UPC (€4320)* — 2024
• **Academic Excellence Scholarship** *- ESPOL ($500x2)* — 2020, 2022

SELECTED ACADEMIC SERVICES

• **Program Committee Member** *- Ecuadorian Technical Chapters Meeting (ETCM)* — 2025
• **Reviewer** *- Ecuadorian Technical Chapters Meeting (ETCM)* — 2025

ADVANCED TRAINING AND COURSES

• **Probabilistic Machine Learning** *- Reading Group (ICMAT - CSIC)* — 2025 - Present
• **Probabilistic Graphical Models** *- Stanford (Coursera)* — 2025
• **Multi-Agent Reinforcement Learning** *- Summer School by Dr. Stefano Albrecht at IIIA (UAB)* — 2024
• **Representation Learning & Generative AI** *- Oxford Machine Learning Summer School (OxML)* — 2024
• **Google ExploreCSR AI & ML application** *- ESPOL* — 2023
• **Reinforcement Learning Specialization Course** *- University of Alberta (Coursera)* — 2022

ENGINEERING EXPERIENCE

• **Telconet S.A.** — Mar 2024 - Mar 2025
DevSecMLOps Engineer — Guayaquil, Ecuador
  ◦ Administered CI/CD pipelines, ensuring the monitoring and automation of software deployment processes.
  ◦ Researched and analyzed new technologies in Machine Learning models in production (LLMs), in order to ensure the ability to deepen data pipelines and guarantee the operational continuity offered to large clients.

• **Hunter CARSEG S.A.** — Mar 2019 - Mar 2024
Software Engineer - Cloud Architect — Guayaquil, Ecuador
  ◦ Led project regarding face recognition to provide an authentication service across all customers applications.
  ◦ Led project about real-time driver drowsiness detection using AI to identify face and head indicators.
  ◦ Optimized backend servers latency (~35% decrease) by improving filtering algorithms in SQL queries of large-scale projects reaching over 40k users.

ADDITIONAL INFORMATION

Languages: Spanish (Native Speaker), English (C2)

[†] Awarded but declined due to contractual limitations