

JULIA LOPEZ GOMEZ

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www.linkedin.com/in/julia-lopez-gomez | www.julialopezgomez.github.io | Bilingual (Spanish and English)

Final-year master's student in Informatics, strongly interested in Robotics, Machine Learning, and R&D applied to practical applications. Actively seeking PhD opportunities in Robot Planning and Manipulation, the focus of my 4th and 5th-year dissertations, and eager to continue contributing to pioneering research in this field.

EDUCATION

The University of Edinburgh, UK

2020 – 2025

MINF Informatics (expected 1st Class)

- Relevant modules: Intro to Mobile Robotics, Advanced Robotics, Machine Learning (practical and theoretical), Computer Vision, IoT Systems, Natural Language Processing, Numerical Linear Algebra.
- Activities: Lead at Endeavour Rockets, Class Rep, Academic Families Parent, Makerspace volunteer.

IES Viera y Clavijo, Spain

2018 – 2020

Spanish Baccalaureate in Technological Sciences (equivalent to A-levels)

- Avg. Grade: 100% with Distinction. Top 10 academic performances over 5K+ students.

RESEARCH EXPERIENCE

LAAS-CNRS and New York University, Online

April 2025 – May 2025

Voluntary Project on Monte-Carlo Tree Search for Manipulation (~50-60h)

- Explored the use of MCTS for manipulation in known benchmarks such as Gymnasium or Metaworld.
- Understanding the integration of RL concepts, Monte-Carlo simulations and tree search algorithms with discretised manipulation scenarios.
- Implemented AlphaZero from scratch, achieving policy generation for the selected benchmarks.
- Supervision: Dr. Nicolas Mansard (LAAS-CNRS) and Prof. Ludovic Righetti (NYU)

The University of Edinburgh, UK

Years 2023 – 2025

MINF Dissertation: Optimisation-Based Manipulation Planning in Convex Decompositions of C-free

- Contribution: Developed a novel manipulation planning pipeline capable of formulating manipulation as an optimisation problem for the first time.
- Used state-of-the-art methods to achieve a convex decomposition of the free configuration space.
- Designed a mixed-integer quadratic program (MIQP) to compute feasible grasp/release sequences while satisfying configuration space and manipulation constraints.
- Integrated the Drake robotics toolbox for modelling, optimisation and visualisation.
- 1st Class mark. Supervision: Dr. Steve Tonneau.

The University of Edinburgh, UK

Spring 2024 - 2025

Selected Machine Learning Projects

- *Spring 2025:* Designed and evaluated segmentation models (U-Net, CLIP-based, Autoencoder) for pet image segmentation, incorporating robustness testing and an [interactive UI](#).
- *Fall 2024:* Built a deep learning-based human activity recognition system using wearable sensors (Thingy & Respeck), including sleep analysis and real-time classification via an Android app.
- *Spring 2024:* Implemented object detection pipelines using transfer learning (Faster R-CNN, SSD) to improve the detection of occluded sheep.

PROJECTS AND TECHNICAL EXPERIENCE IN R&D

Makerspace Student Technician – School of Informatics Makerspace

Jan. 2024 – May 2025

- Developing a self-driven project of controlling a Robotic Arm with ROS2 and Drake.
- Delivered multiple Raspberry Pi, Arduino and 3D design workshops to other university students.
- Volunteering 10-15 hours a week, calibrating 3D printers, preparing electronics, and assisting System Design Project students (3rd year) in robot-building and using makerspace resources.

Payload Software and Electrical Lead – Endeavour Rockets

Sep. 2022 – Sep. 2024

- Developed a CanSat and a 3-unit CubeSat as payloads for a student-assembled rocket.
- Learned and designed the circuit schematics and PCBs of the payload with Altium Designer.
- Key skills: Python, Raspberry Pi, embedded programming, parafoil design, etc.
- 2nd position in Combined 3km Launch Vehicle and CanSat category at Mach-23 competition.
- Carried experiments about Microbial Air Sampler, Simulated Life Search, Albedo Detection, etc.
- Invited to Airbus CubeSat day to present our project to other UK satellite student teams.

Other projects:

- **Electronic Laundry Folder:** Manufactured an assistive laundry-folding robot. Skills: Raspberry Pi, Arduino, Python, Fusion360, 3D printing/laser cutting, product development, marketability....
- **Pizza Dronz:** Worked on a simulated drone delivery system using the A* algorithm.
- **CanSat Europe:** Assembled a microsatellite for the ESA CanSat Competition. PCB, CAD, 3D printing.

WORK EXPERIENCE

J.P. Morgan Chase & Co, UK

Summer 2023

Software Engineering Summer Intern

- Agile product development: Java, Maven, SQL, Spring Boot, Oracle Databases, react.js.

UNIVERSITY INVOLVEMENT – Teaching, Mentoring, and Volunteering

3rd and 5th Year Informatics Representative

Years 2022 – 2023, 2024 – 2025

- Gathered weekly feedback from over 300 students and communicated it with university faculty.

Informatics Families Parent

Year 2024 – 2025

- Mentoring and supporting twelve 1st year students at the start of their academic journey.

Informatics Teaching Support Provider

Fall 2022

- Lead a weekly lab to aid 1st year students in their learning of Haskell and Computational Logic (~50h).

RELEVANT SKILLS

- **Programming Languages:** Python (Matplotlib, NumPy, Pandas, OpenCV), Java (Maven, Spring Boot), C/C++ (Memory Management, Linux, Embedded Programming), Haskell, SQL, MIPS Assembly.
- **Robotics:** Robot Planning and Kinematics, Drake Robotics Toolbox, Pinocchio library, ROS.
- **Machine Learning:** ML libraries (PyTorch, Tensorflow, Sklearn, tqdm, wandb), Deep Neural Networks, CNNs, Reinforcement Learning, Image Segmentation (UNet, CLIP, Autoencoder architectures).
- **Tools & Software:** Altium (PCB Design), Fusion 360 (CAD), Git, Gira, Agile development.
- **Mathematics:** Linear and Non-linear Optimization, Mixed-Integer Programming.
- **Other:** Raspberry Pi, Arduino, 3D Printing, Electronics, Circuit Design, Laser Cutting, Soldering.

AWARDS

The Edinburgh Award: Makerspace Student Technician

June 2024

Recognising successful performance in the role of Student Technician by completing a technical project, mentoring students in the Makerspace, and delivering relevant workshops.

The Edinburgh Award: Leadership in Student Opportunities

April 2023

Recognising leadership, communication, critical thinking, and digital literacy skills exhibited as UG3 Rep.

1st Prize Overall in AdaHack Hackathon: Twitter Solves Rubik's Cube

November 2022

Used the Twitter API to gather Rubik's cube moves from the community, showing the cube's change in 3D.

Award of Academic Excellence

July 2020

Top 10 academic performances in the district of S/C de Tenerife (over 5,000 students) for the last two years of high school and the National University Entrance Exam (EBAU).