Jaime Sabal Bermúdez

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EDUCATION

Imperial College London   London, UK
MSc Artificial Intelligence; Distinction   *Oct 2021 - Oct 2022*
Notable courses: Computer Vision, Reinforcement Learning, Natural Language Processing, Software Engineering Group Project.

- **MSc Individual Project**: Designed Distributional Constrained Policy Optimization (DCPO), a novel approach for reliable constraint satisfaction in RL based on Constrained Policy Optimization and incorporating aspects of distributional RL (currently in-review for ESCAPE-33).

University College London   London, UK
BSc Physics; First Class Honours (81.86%)   *Sept 2018 - June 2021*

EXPERIENCE

Hypermile   London, UK
Research Engineer   *Nov 2022 - Current*
- **IUK Project Co-Lead**: Developing tools and interface for an end-to-end Advanced Driver-Assistance System (ADAS) using reinforcement learning and computer vision methods. Objectives include improving vehicle economy of current solution (based on model predictive control) by at least 50%.

Capital Pilot   London, UK
Database Engineer   *Dec 2020 - March 2021*
- **Data Aggregation & Standardisation**: Merged data contained in various sources and mitigated inconsistencies through a command-line Python application that allowed the user to efficiently inspect and discard redundancies in them.

University College London   London, UK
Research Assistant - Dr. Isabel Llorente García   *Jun 2020 - October 2020*
- **Magnetophoretic Control Simulation**: Simulated the magnetophoretic control of highly oriented pyrolytic graphite (HOPG) microparticles using Python to improve the understanding of biophysical interactions within the human body.

Tarpuna Energy Bank   Barcelona, Spain
Co-Founder   *Feb 2017 - June 2018*
- **Reducing Energy Consumption at High School**: Co-founded an energy bank along with two peers to analyse the energy consumption across different classrooms in our school and determine areas where it could be reduced. Our measures allowed for a 17% reduction in energy consumption across the tested classrooms.

ACADEMIC PROJECTS

- **jaisalab**: An open-source Python library based on the garage toolkit for developing and evaluating RL algorithms. The framework builds on garage to add functionality for safe RL settings (i.e. where there is a cost associated with each state-action pair) and thus provides an auxiliary set of modular tools for implementing constrained RL algorithms (GitHub).
- **niteshade**: An open-source Python library developed as part of the Software Engineering Group Project in the MSc in AI that provides a framework for simulating data poisoning attack and defence strategies against online machine learning systems. It offers a simple and intuitive API that is heavily integrated with PyTorch (GitHub, PyPi, Documentation).

PUBLICATIONS

- Jaime Sabal Bermúdez, Antonio del Rio Chanona, and Calvin Tsay (Feb. 2023). "Distributional constrained reinforcement learning for supply chain optimization". URL https://arxiv.org/abs/2302.01727.

HONORS AND AWARDS

- **Corporate Partnership Programme Award (Imperial College London, 2022)**: Departmental award for excellence in project work.
- **Nova 111 Student List 2022 Winner (Nova Talent, 2022)**: Chosen as one of the top 10 talents in Spain within Mathematics, Physics and Chemistry.
- **American Express & Microsoft Hackathon (Microsoft, 2019)**: Best technical analysis at the 2019 UCL Data Science Society Hackathon; analysed American Express credit datasets using Python & Microsoft Azure to draw a business proposal to increase their profits. Wrote a blog detailing methods used.

ADDITIONAL SKILLS

- **Languages**: Spanish (native), English (fluent), Catalan (fluent), French (basic)
- **Tech**: Python, Matlab, Docker, GIT, LaTeX, AWS, Microsoft 365