Jaime Sabal Bermúdez

 | | | ✉ jsabalb@gmail.com | +44 07762479042

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 (published at 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 - Oct 2023

- **Team Leadership and Project Management**: Co-led the full lifecycle of an Innovate UK project focusing on the implementation of an end-to-end Co-Pilot model using reinforcement learning (RL) and computer vision.
- **Data Processing and Engineering**: Built a dynamic data wrangling pipeline capable of parsing, preprocessing, and structuring large data sets in a flexible manner for a variety of machine learning applications pertaining to the end-to-end approach. Also created a tailored transformation framework for efficient data augmentation and scaling.
- **RL Environment**: Developed a cutting-edge RL environment and pipeline to optimize the ADAS model, implementing a physics-based kinematics model to transition between states. Utilized a multiprocessing approach for efficient sampling of environment trajectories using Dask distributed.
- **End-to-end Model Development**: Designed stochastic policy and value function neural networks consisting of a pretrained encoder that allowed the agent to successfully perform segmentation and classification tasks on the input images, followed by an MLP to process the corresponding logs and image features to produce an action (i.e. a target speed).

Capital Pilot — London, UK
Database Engineer — Dec 2020 - Mar 2021

- **Data Aggregation & Standardisation**: Integrated data from multiple sources and resolved inconsistencies using a command-line Python application, enabling efficient redundancy detection and elimination.

University College London — London, UK
Research Assistant - Dr. Isabel Llorente García — June 2020 - Oct 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.

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 are costs associated with state transitions) and thus provides an auxiliary set of modular tools for implementing constrained RL algorithms (GitHub).
- **niteshade**: An open-source Python library 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)
- **Technology**: Python, PyTorch, Dask, Garage, Docker, GIT, LaTeX, AWS, Microsoft 365

* References available upon request.