

Pablo Ubilla Pavez | CV

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Education

- 2024 **MSc Ecology and Data Science**, *University College London*
- 2023 **Master in Operations Management**, *Universidad de Chile*
- 2023 **Professional Degree in Industrial Engineering**, *Universidad de Chile*
- 2022 **Bachelor in Industrial Engineering**, *Universidad de Chile*
- 2022 **Exchange Program**, *Universiteit Leiden*

Research Interests

Machine learning, statistics, optimization, and their application to different domains (e.g., ecology, sustainability, elections, human behaviour)

Research Experience

- 2024 **Master's Thesis**, *University College London*, Supervisor: Daniel Maynard
How many types of trees are there? An approach using consensus clustering
 - Conducted unsupervised clustering using Gaussian Mixture Models, optimizing the number of clusters with BIC
 - Applied consensus clustering with resampling from the empirical error distribution
 - Compared to taxonomic groups, showing evidence for convergent evolution
- 2023 **Master's Thesis**, *Universidad de Chile*, Supervisor: Charles Thraves
Outlier detection for multicandidate elections with demographic groups [pdf]
 - Developed EM-algorithm approximations to solve the Ecological Inference problem
 - Applied mixed-integer programming for demographic aggregation
 - Produced automatized report for Chilean election authorities
- 2021 **Research Assistant**, *Complex Engineering Systems Institute*
Adaptive questionnaire with Machine Learning
 - Used ML imputation methods to estimate conditional probabilities from incomplete data
 - Optimized question selection with dynamic programming and greedy approaches using variance and entropy
 - Revisited in 2024 to apply Reinforcement Learning using prediction error as a proxy

Preprints

Thraves, Charles and Ubilla, Pablo, **A Fast Ecological Inference Algorithm for the RxC case** (2024). Available at SSRN: <https://ssrn.com/abstract=4832834>

Work Experience

- Oct 2023 – **Data Analyst**, *Airnguru*, Remote
- Present
 - Developing dynamic pricing automation using Google Cloud services
 - Market simulation to test pricing strategies

- Sep 2022 – **Consultancy**, *Municipalidad de Vitacura*, Santiago
- Jan 2023
- Estimated street-level waste collection using GPS data and truck collection modelling
 - Optimized truck routes and daily street clusters using OR-tools to balance waste load
 - Achieved a 60% reduction in greatest time discrepancy
- Aug 2020 – **Intern**, *Fundación Tierra Viva*, Santiago
- Oct 2020
- Contributed to Chile's government environmental summary, focusing on citizen science
 - Managed databases, designed conditional surveys, and diffusion campaign

Teaching Experience

(*Term season varies depending on the hemisphere)

Lecturer

Fall 2023 **Stochastic Models**, Industrial Engineering, Universidad Finis Terrae

Teaching Assistant

Fall 2023 **Financial Engineering**, MSc Computational Finance, University College London

Spring 2024 **Applied Comp. Finance**, MSc Computational Finance, University College London

Fall 2023 **Modelling and Optimization**, Industrial Engineering, Universidad de Chile

Fall 2020 **Modelling and Optimization**, Industrial Engineering, Universidad de Chile

Spring 2022 **Decisions Under Uncertainty**, Industrial Engineering, Universidad de Chile

Spring 2021 **Decisions Under Uncertainty**, Industrial Engineering, Universidad de Chile

Spring 2021 **Game Theory and Strategy**, Industrial Engineering, Universidad de Chile

Fall 2021 **Probabilities**, Industrial Engineering, Universidad de Chile

Fall 2021 **Operations Research**, Industrial Engineering, Universidad de Chile

Spring 2020 **Operations Research**, Industrial Engineering, Universidad de Chile

Spring 2021 **Operations Research**, Industrial Engineering, Universidad Adolfo Ibáñez

Summer 2022 **Operations Research**, Industrial Engineering, Universidad Adolfo Ibáñez

Exam Assistant

Fall 2022 **Probabilities**, Industrial Engineering, Universidad de Chile

Fall 2022 **Information Engineering**, Industrial Engineering, Universidad de Chile

Spring 2019 **Modelling and Optimization**, Industrial Engineering, Universidad de Chile

Fall 2020 **Introduction to Calculus**, Mathematics Engineering, Universidad de Chile

Spring 2019 **Introduction to Algebra**, Mathematics Engineering, Universidad de Chile

Fall 2019 **Probabilities and Statistics**, Mathematics Engineering, Universidad de Chile

Awards & Scholarships

2024 **Best Presentation Prize**, *MSc Ecology and Data Science UCL*

2024 **Dean's List (top 5%)**, *MSc Ecology and Data Science UCL*

2024 **Top Graduate Award**, *Master's Operations Management UCH*

2021 **Best Teaching Assistant**, *Industrial Engineering Department UCH*

2023 **Masters Abroad Scholarship**, *Government Funding Agency (ANID)*, (Fully funded)

2022 **Academic Excellence Scholarship**, *Master's Operations Management UCH*

2022 **International Mobility Scholarship**, Santander Bank
2018–2021 **Outstanding Student**, Faculty of Physics and Mathematics UCH

Talks & Posters

- 2025 **A Fast Ecological Inference Algorithm for the RxC case (Poster)**, Pucón, Chile
Workshop in Management Science
- 2024 **A Fast Ecological Inference Algorithm for the RxC case (Talk)**, Bangor, Wales
Operational Research Society 66
- 2024 **How many trees are there? An approach using consensus clustering**, Cardiff, Wales
British Ecological Society Macroecology
- 2024 **A novel framework for optimized sensor deployment in biodiversity monitoring**,
Surrey, England
Surrey Wildlife Trust Showcase

Skills

P. Languages Python, R, SQL, MATLAB
Mach. Learn. TensorFlow, PyTorch, Keras, Scikit-Learn, Gym
Optimization Gurobi, OR-Tools, CVXPY, PuLP
Other Git, \LaTeX , HPC

Languages

English Advanced *TOEFL iBT 112/120, IELTS 8/9*
Spanish Native

Miscellaneous

- Participated in music bands and societies, performing at events and concerts at universities in both Chile and London
- Earned a Music Production Certificate from Projazz
- Motivated by rock climbing since 2023