

# Sergio Estañ Ruiz

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## Education

### Imperial College London

*PhD in Statistics and Machine Learning for Public Policy*

*Sept 2024 – present*

- Awarded the competitive President's Scholarship to pursue the PhD.
- Researching network time series models and deep learning architectures like LLMs.
- Focus on both theoretical foundations (e.g. singular learning theory, geometric deep learning) and applied research for public policy questions such as macroeconomic forecasting.
- Strong technical expertise in high-performance computing (HPC clusters, GPU training, large-scale parallelised experiments, and reproducible pipelines in Python and R)

### University of Cambridge

*MASt in Mathematics (Part III)*

*Sept 2022 – July 2023*

- *Distinction*, 81%, with an 85% on my thesis on topological data analysis. I benchmarked different topological invariants with classical ML models against different datasets, using algebraic topology to interpret learning dynamics.
- Courses: Lie Algebras, Algebraic Topology, Differential Geometry, Advanced Probability, Stochastic Calculus, Statistical Learning. Attended further courses on Information Theory and Statistical Methods.

### University of Warwick

*BSc in Mathematics*

*Sept 2019 - July 2022*

- *First*, with an average of +92%, second highest in the cohort.
- Courses: Algebraic Topology, Manifolds, Probability Theory, Rings and Modules, Applied Stochastic Processes, Measure Theory, Commutative Algebra, PDEs, etc.

### Universidad Nacional de Educación a Distancia (UNED)

*BSc in Economics*

*Sept 2022 - present*

- Part-time online BSc in Economics to complement my mathematical knowledge.
- Courses: Macroeconomics, Microeconomics, History of Economics, Public Budgeting, Econometrics...

## Awards

### President's PhD Scholarship

*2024*

- Awarded competitively this scholarship to pursue a PhD under Professor Nason Guy's supervision.

### International Mathematics Competition (IMC)

*2022*

- Second award in the IMC as a selected team member for the University of Warwick.

### Short Term Mobility Bursary

*2022*

- Bursary to fund some research on representation theory at the University of Toulouse.

### Pearson Outstanding Learner Award

*2019*

- Awarded for receiving the highest mark in Europe for GCE Maths and highest mark in Spain for GCE Chemistry.

### COBIS Excellence Award

*2019*

- Awarded by COBIS (Council of British International Schools) for “academic excellence during sixth form and for outstanding GCE results”.

### Sir Roger Fry Scholarship

*2017-2019*

- A 10,000€ scholarship to pursue sixth form at King's College of Alicante.

## Experience

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**Joint Thesis Supervisor to MSc Student***Imperial College London**Imperial London, UK**May 2025 - August 2025*

- Joint supervised with Professor Guy Nason and Dr Lloyd Fung an MSc thesis on discovering equations.

**Research Assistant***IESE**Barcelona, Spain**Sept 2023 – May 2024*

- Research assistant to Professor Diego Aparicio. Looked at logistic fixed-effects models to examine the existence of a pink tax in online pricing.
- Acquired experience with *Stata* programming language and traditional variants of the regression model.

**Mathematics Tripos Supervisor***University of Cambridge**Cambridge, UK**Oct 2023 – July 2024*

- Supervised three second-year modules for nearly 10 colleges at Cambridge: variational principles, linear algebra and numerical analysis.

**STEP Examiner (Cambridge Mathematics Tripos Entrance Exam)***Cambridge Assessments**Cambridge, UK**July 2023 – July 2024*

- Developed the mark scheme for the STEP exam for two years. This is the entrance exam for the mathematics tripos at the University of Cambridge.

**Maths Teacher in Ghana***Nsaba Islamic School with Warwick in Africa**Agona East, Ghana**June 2022 – July 2022*

- Volunteered for two months as a full-time maths teacher in the Warwick in Africa programme.

**Fiscal Consultant***ER Asesores**Alicante, Spain**June 2021 – Sept 2021*

- Intern at a fiscal and legal consulting firm in Spain, learning about accounting and fiscal consulting.

**Research Assistant***University of Alicante (UA)**Alicante, Spain**June 2019 – Sept 2019*

- Research assistant under the supervision of Professor Sergio Cuenca Asensi in the Department of Technology and Computing.

## Talks

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**Network Stochastic Processes and Time Series (NeST) Workshops**

- Two talks on deep learning models to infer latent network structures in multivariate time series.

*Oxford/Bath**September/October, 2025***Sunbelt Conference**

- Poster presentation on graph-based macroeconomic models for the International Network for Social Network Analysis.

*Sorbonne**June, 2025***Random Network Workshop**

- Talk on open problems regarding limiting statistical behaviour of dynamic network-based time series models.

*Sheffield**May, 2025***International Mathematics and Statistics Student Research Symposium**

- Talk on graph-based time series models with applications to macroeconomic forecasting.

*Online**April, 2025*

## Technical Skills

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**Programming skills:**

- Programming languages: Python (NumPy, SciPy, PyTorch), R (GNAR, igraph, parallel), Stata
- High-Performance (automated experiments, parallel computing, GPU training, etc)

**Languages:** Spanish, English, Catalan (Proficient); French (Advanced); German (Basic)