Joanna Marks

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Education

Imperial College London, Department of Mathematics 2024 – 2028
PhD Candidate *London, UK*

- Fully funded by the **EPSRC Statistics and Machine Learning (StatML) CDT**, a joint research program between **Imperial College London** and the **University of Oxford**.
- Member of the *Akyildiz Group*, working under the supervision of **dr Deniz O. Akyildiz** and **dr Riccardo Passegieri** on intersections of optimal transport and generative modelling
- **Research Focus**: Investigating the interplay between **Optimal Transport (OT)** and **Generative Modeling**, with a focus on latent variable models. Currently working with **dr Gabriel Rioux** on developing a novel, scalable algorithm for **Gromov-Wasserstein distance** computation to align complex probability spaces.
- **Recent work**: Developed a scalable training method for **latent-space Energy-Based Models (EBMs)** using interacting particle dynamics [pre-print]. Recently presented at ELLIS Unconference Amortized ProbML workshop, which took place alongside **EurIPS**.
- **Advanced Training:** Completed doctoral-level modules in Deep Learning, Advanced Bayesian Methods, Statistical Inference, and Causal Inference.
- **Tech Stack:** PyTorch, POT

Imperial College London, Department of Mathematics 2023 – 2024
MSc Statistics (Theory and Methods) *London, UK*

- **Core Modules**: Deep Learning (86%), Machine Learning (81%), and Advanced Simulation Methods (78%).
- **Master's Project**: *Mean-field limits for discrete-time Hawkes processes on homogeneous and inhomogeneous graph structures* (81%; top grade in cohort)
- Extended research to wider settings with a manuscript currently in preparation for journal submission.
- **Tech Stack**: Python, Pytorch, R and Stan

University of Warwick, Mathematics Institute 2020 – 2023
BSc Mathematics (Overall: 74%; First-Class Honours) *Coventry, UK*

- **Including modules**: Mathematics of Machine Learning (73%), Markov Processes (87%), Bayesian Statistics and Decision Theory (75%), Stochastic Processes (85%).
- **Projects**: Second-year project on modelling football match results.
- **Skills**: Completed a *Python for Data Science* course.

Nicolaus Copernicus Bilingual High School 2016 – 2019
International Baccalaureate (40/45; HL: 7/6/6) *Warsaw, Poland*

- **Achievements**: 7 in HL Mathematics.

Work Experience

Amelco UK Jul 2024 – Oct 2025
Quantitative Analyst (Part-time) *London, UK*

- Helped to develop **Python-based pricing models** for basketball pre-match markets, incorporating team/player strength, pace and efficiency
- Helped to develop a **time-series library** for custom state-space models fitting using JAX.
- Worked with traders and product to translate **model outputs into market prices**, sanity checks, and risk controls; created diagnostics to monitor model performance

Research Experiences

Imperial College London, Department of Mathematics Jul 2023 – Sep 2023
The Mary Lister McCammon Summer Research Fellow *London, UK*

- Developed a **stochastic model** to simulate the development of cancer cells in a joint system with lymphocyte cells.
- Introduced an **interaction matrix** to the stochastic model accounting for interactions between cancer cells and lymphocyte cells.
- Collaborated with an MSc student to compare the stochastic model to an analogous continuous model.
- Worked as **part of a cohort of fourteen fellows**, participated in Science Communication Training, and shared research with a broad audience in the final presentation.

University of Oxford, Department of Statistics Jul 2022 – Sep 2022
Research Intern *Oxford, UK*

- Developed and implemented a **Mixed Additive Model** in Python to assess the difficulty of a given pass and calculate the passing ability of a football player.
- Worked under the supervision of Professor Christl Donnelly, Head of Statistics at University of Oxford, and PhD candidate Matthew Penn.
- Conducted independent research, implemented it on real-life data, and **contributed to pre-match reports** of Oxford City football club.
- Research was mentioned in the **Nature** science journal (link). An article based on the developed model was published in *Significance* - Royal Statistics Society's journal on the nature of women's football: (link).

University of Warwick, Department of Statistics Jul 2023 – Sep 2023
Undergraduate Research Support Scheme *Coventry, UK*

- Developed a mid-season table for the Polish volleyball league, accounting for the strengths of each team played.
- Worked under the supervision of Dr. Nick Tawn and Professor David Firth.

Other experiences

Poland 2.0 Foundation Feb 2021 – Dec 2022
Project Leader *Warsaw, Poland*

- Organized the yearly student conference Poland 2.0 Summit.
- Managed a team of 45 people and a budget of £85,000.
- Collaborated with representatives from Boston Consulting Group, Goldman Sachs, and Procter & Gamble.

TOTALbet Stakeholder Company Jan 2020 – Jul 2020
Junior Data Analyst *Warsaw, Poland*

- Evaluated the risk of promotions and analyzed the profitability of existing ones.
- Co-created algorithms to detect dangerous players.
- Created reports in Excel and presented them to the board of directors.
- Assisted in structuring the database and extracting relevant data using PostgreSQL.

Skills

Languages: English (fluent), Polish (native), German (intermediate (B2)), French (beginner (A1))
Programming Languages: Python, R, basics of Java, basics of MatLab