

THOMAS COWPERTHWAITE

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EDUCATION

PhD Applied Mathematics, University of Cambridge 2024 – 2027

Developing flexible, data-efficient, calibrated generative models with a focus on scientific applications.

- **T Cowperthwaite**, H Moss. “GPGreen: Learning Linear Operators with Gaussian Processes”. 1st Workshop on Differentiable Systems and Scientific Machine Learning @ EurIPS (2025).
- H Moss, L Astfalck, **T Cowperthwaite**, C Doumont, S Willis, P Hennig, C Nemeth, A Zammit-Mangion. “Conditioning Gaussian Processes on Almost Anything”. arXiv preprint arXiv:2605.21041 (2026).

MRes Environmental Data Science, University of Cambridge 2023 – 2024

Pass with Distinction (75%)

Relevant Modules: Advanced Data Science, Machine Learning and the Physical World, Geometric Deep Learning, Deep Neural Networks, Topics in Mathematics for Deep Learning.

MSci Physics with Theoretical Physics, Imperial College London 2019 – 2023

Relevant Modules: Plasma Physics (80%), Atmospheric Physics (77%), MSci Research Project (78%).

Awards: The Ludlam Prize for best performance in Atmospheric Physics.

RESEARCH EXPERIENCE

Probabilistic Operator Learning for Climate Model Parameterisation Apr 2024 – Jul 2024

Master’s dissertation project. Mark received: 73%

University of Cambridge

Developed a novel probabilistic operator learning framework which offers closed-form, principled estimates of predictive uncertainty. Achieved competitive performance on benchmark PDE emulation problems in a low-data regime.

Using Satellite-Observable Variables to Predict Abyssal Ocean Circulation Jan 2024 – Apr 2024

Group project. Mark received: 77%

University of Cambridge

Demonstrated that machine learning models are capable of measuring the strength of deep ocean currents using only satellite-observable variables. Found evidence that satellite-observable variables are predictive of future changes to deep ocean currents, with significant implications for long-term climate science.

Social Dynamics on Higher-Order Networks Jun 2022 – Present

Master’s dissertation project. Mark received: 78%

Imperial College London

Developed a new model of social interaction in higher-order networks which include group effects. Worked with large datasets describing real-world social activity and aimed to better understand how disinformation spreads through a population. Motivated models with sociological literature and implemented them through generalisations to the Ising model of statistical physics.

SKILLS

Technical Skills Python (advanced), R (elementary), Git, Bash, prior experience in HTML, CSS, JavaScript, SQL.

Python Skills Fluent in OOP. Experience using NumPy, SciPy, pandas, Matplotlib, scikit-learn, PyTorch, netCDF4.

PROFESSIONAL DEVELOPMENT

Conference Organiser. AI4ER Symposium, Cambridge (Nov 2024).

Summer Schools. ICCS Summer School, Cambridge (Jul 2024), GeMSS Spring School/StatLearn, Antibes (Apr 2025), ELLIS Summer School, Cambridge (Jul 2025).