

EDUCATION

D.Phil. Statistics, *University of Oxford*

10/2021 – NOW

ANTICIPATED GRADUATION: 07/2025

- Working on applications of rough path theory to numerical stochastic analysis with Terry Lyons
- Two completed projects in mathematical population genetics [1,2] with Alison Etheridge

M.Sc. Mathematics, *University of Oxford*

10/2020 – 07/2021

GRADE: DISTINCTION (Rank 1 / 52)

- Specialisation in probability theory and stochastic analysis
- Oxford Mathematical Prize for best performance in examinations

B.Sc. Computer Science, *Karlsruhe Institute of Technology*

10/2017 – 10/2020

GRADE: 1.0 (GPA 4.0) Top 0.5%

- Thesis on posterior consistency of Gaussian process regression in metric spaces
- Received best thesis award and published thesis in JMLR [4]

B.Sc. Mathematics, *Karlsruhe Institute of Technology*

10/2018 – 07/2020

GRADE: 1.0 (GPA 4.0) Top 3.3%

- Joint maths–physics thesis on quantum Anderson localisation in disordered media
- Theoretically best possible final transcript (best grade 1.0 in every exam)

B.Sc. Physics, *Karlsruhe Institute of Technology*

10/2016 – 08/2020

GRADE: 1.0 (GPA 4.0) Top 1.9%

EXPERIENCE

Berkeley AI Research (UC Berkeley)

03/2025 – 07/2025 (FT)

Research Intern

Working on methods to mitigate partial observability in reinforcement learning with Cameron Allen and Stuart Russel at the Center for Human-Compatible AI.

QED Analytics

06/2024 – 10/2024 (FT)

Mathematical Modeller (Internship)

In one project, I used probabilistic modelling, data analysis, and machine learning to develop predictive algorithms for financial regime changes. In a second project, I worked on novel applications of known methods in combinatorial optimisation and numerical linear algebra to develop bespoke solutions for large scale scheduling problems in the LNG industry.

FUNDING & AWARDS

EPSRC DTP Scholarship

2021 – NOW

University of Oxford

St. Catherine's Science Graduate Scholarship

2021 – NOW

Awarded to the top two incoming PhD students in sciences at St. Catherine's College each year

St. Catherine's College, Oxford

Oxford Mathematical Prize

2021

For best performance in examinations in the 2021 cohort of the M.Sc. in Mathematical Sciences

University of Oxford

Gisela and Erwin Sick Science Award

2020

For best 2020 thesis across all areas related to information science and technology

Karlsruhe Institute of Technology

Scholarship by Studienstiftung

2017 – 2021


Most prestigious undergraduate scholarship in Germany, awarded to less than 0.5% of students

German Academic Scholarship Foundation

CODING PROJECTS & COMPETITIONS

Citadel–C1 Terminal AI Competition. Players code algorithms that compete in a head-to-head turn based strategy game, placing defensive structures, managing resources, and coordinating attacks.

- I wrote an AI–assisted tree search algorithm built on top of a highly optimised turn simulator and handcrafted algorithms that find effective attacks and minimal defensive answers to possible incoming attacks.
- **1st Place** on Global Leaderboard April to June 2022, **2nd Place** in Summer Invitational August 2022

Evolutionary Algorithm for Architecture Search (GitHub ). Implemented a framework in TensorFlow that automates architecture search through an evolutionary algorithm. It maintains a population of neural networks, trains them in parallel, duplicates some and eliminates others based on performance, mutates each, and repeats. Mutations include deletion and insertion of individual nodes and whole layers.

International Collegiate Programming Contest (ICPC). The ICPC is a competitive programming contest in which teams of three students from universities across the world (or, in the GCPC, across Germany) compete in five hour contests, solving problems that require mathematical and algorithmic thinking, coding skills, and team work.

- **5th Place** in GCPC 2020, **6th Place** in GCPC 2019

ACADEMIC ACTIVITIES

Peer Reviewer for *Electronic Journal of Probability* and *Stochastic Processes and their Applications*

Invited Conference Talks

JUL 2025	44th Conference on Stochastic Processes and their Applications (<i>upcoming</i>)	Wroclaw, Poland
MAR 2024	Evolution in structured populations: recent progress and new challenges	University of Oxford

Invited Seminar Talks

NOV 2023	Bath Probability Seminar <i>University of Bath</i>
MAY 2023	Oxford Probability Seminar <i>University of Oxford</i>

Contributed Talks

NOV 2023	Junior Probability Seminar	University of Oxford
FEB 2023	Oxford Stochastic Analysis Seminar	University of Oxford
JUN 2022	Short Talk at PIMS Summer School in Probability	University of British Columbia, Vancouver

Conferences

JUN 2024	HiGHS Workshop 2024	University of Edinburgh
MAR 2024	Conference “ <i>Evolution in structured populations: recent progress and new challenges</i> ”	University of Oxford
MAR 2023	Spring School on Probabilistic Methods in Population Biology	Technische Universität Darmstadt
SEP 2022	Conference “ <i>Stochastic Models in Mathematical Physics</i> ”	Technion, Haifa, Israel
JUN 2022	PIMS Summer School in Probability	University of British Columbia
MAY 2022	CRM Conference “ <i>Branching systems, PDEs, and population models</i> ”	Université de Montréal

TEACHING EXPERIENCE

St Peter’s College, Oxford

01/2022 – NOW

College Lecturer

Tutored undergraduate students in analysis, measure theory, and integration. Involved in the annual undergraduate interview and admissions process. Tutored visiting students in one-on-one and small group tutorials.

Department of Statistics, University of Oxford

01/2022 – 06/2024

Class Tutor

Tutored undergraduate students in probability theory.

Karlsruhe Institute of Technology

10/2017 – 09/2020

Class Tutor

Taught classes and marked exams for undergraduate students in probability theory, measure theory, and analysis.

PUBLICATIONS

- [1] **Koepernik, Peter** (2024). The Brownian Spatial Coalescent. *arXiv:2401.08557*, *submitted*.
- [2] **Koepernik, Peter** (2024). On a repulsion-diffusion equation with immigration. *Discrete and Continuous Dynamical Systems*, 44(4), 1106-1133.
- [3] **Hambly, Ben and Koepernik, Peter** (2023). Dimension results and local times for superdiffusions on fractals. *Stochastic Processes and their Applications*, 158, 377-417.
- [4] **Koepernik, Peter** (2023). Convergence Rates for Nearest Neighbour Regression in Infinite Dimensions. *St Catherine’s Academic Review*, 1, 45-63.
- [4] **Koepernik, Peter and Pfaff, Florian** (2021). Consistency of Gaussian process regression in metric spaces. *Journal of Machine Learning Research*, 22(244), 1-27.