

EDUCATION

Imperial College London

London

*PhD in Machine Learning**Oct. 2021 - Present*

- Supervised by Dr. Mark van der Wilk
- Visting at the University of Oxford since October 2023.
- **Research Focus:** Intersection of Causality, Bayesian inference, and Machine learning.

University College London

London

*Computational Statistics and Machine Learning MSc; Distinction (Dean's List)**Sep. 2017 – Sep. 2018*

- **Thesis:** Created and tested a novel algorithm for conditionally executed learning in modular networks to ensure the most efficient parameter usage. Method involved learning parameters of a Beta Bernoulli process using the pathwise gradient estimator. (82%)
- **Selected Modules:**
 - * Probabilistic and Unsupervised Learning¹ (80%)
 - * Approximate Inference² (83%)
 - * Natural Language Processing (83%)
 - * Advanced Deep Learning and Reinforcement Learning³ (89%)
 - * Applied Machine Learning (optimization, NNMF, spectral clustering, 91%)
 - * Applied Bayesian Methods (Hierarchical Bayesian models)
 - * Statistical Modelling (GLMs, GAMs)
 - * Supervised Learning (SVM, Learning Theory, Kernels)

Imperial College London

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*Physics MSc; Distinction**Sep. 2016 – Sep. 2017*

- **Thesis:** Separating modes of B Meson decays to test the validity of using these decays to verify the discrepancy between theory and experiment in lepton universality. Relevant decays were separated from background using machine learning techniques.
- **Essay:** Conducted a 6000-word Self-Study project and a presentation on the principles and benefits of quantum computing (Shors algorithm, Grovers algorithm), as well as experimental procedures for its realisation.
- **Modules:**
 - * Advanced Statistical Machine Learning and Pattern Recognition
 - * Quantum Information
 - * Cryptography Engineering
 - * General Relativity
 - * Unification (explaining the standard model using group theory)
 - * Quantum Field Theory
 - * Foundations of Quantum Mechanics

Imperial College London

London

*Physics with Theoretical Physics BSc; 2:1**Sep. 2013 – July 2016*

- **Project:** Network Centrality 6000-word essay and presentation on properties and unification attempts of centrality indices in networks — statistical methods to determine the most important vertex; included python analysis of networks.

¹ Taught by Gatsby Computational Neuroscience Unit

² Taught by Gatsby Computational Neuroscience Unit

³ Taught by Google DeepMind

EXPERIENCE

Amazon

Applied Science Intern - AGI Foundations

Tuebingen

May. 2024 - Nov. 2024

- Research on scaling neural networks (LLMs) while preserving feature learning behavior as well as stability

Babylon Health

Research Scientist

London

Dec. 2018 - Oct. 2021

- Research and applications focused on Causal Discovery (finding causal relations in data as opposed to correlations) and Simulation (using causal relations to compute causal effects and counterfactuals)
- Research in causal discovery with multiple datasets lead to publication at AAAI 2020. Multiple studies with overlapping variables are common in medicine. Presented a poster and a gave a talk at AAAI 2020. Work was featured in MIT technology review: [Link](#)
- Used research outcomes to analyse effect of interventions on real user interaction data.

PUBLICATIONS

- Anish, Matthew Ashman, James Requeima, and Mark van der Wilk. "A Meta-Learning Approach to Bayesian Causal Discovery.", Preprint, 2024.
- Anish Dhir, Ruby Sedgwick, Avinash Kori, Ben Glocker, and Mark van der Wilk. "Continuous Bayesian Model Selection for Multivariate Causal Discovery.", Preprint, 2024.
- Anish Dhir, Samuel Power, and Mark van der Wilk. "Bivariate Causal Discovery using Bayesian Model Selection." In Forty-first International Conference on Machine Learning (ICML), 2024.
- Anish Dhir, and Mark van der Wilk. "Causal Discovery using Marginal Likelihood." In NeurIPS 2022 Workshop on Causality for Real-world Impact, 2022.
- Alexis Bello*, Anish Dhir*, and Giulia Prando. "Generalization bounds and algorithms for estimating conditional average treatment effect of dosage." arXiv preprint arXiv:2205.14692 , 2022.

AWARDS

- Dean's List UCL 2017/18

PROGRAMMING SKILLS

Languages: Matlab, Python, limited experience in C++; Frameworks: TensorFlow, Jax, PyTorch, Numpy; Experienced with HPC, AWS, distributed training of large models.

OTHER EXPERIENCE

Teaching Assistant at Imperial College

TA

London

Sep. 2021 - Current

- Conducted seminars and tutorials for groups of students in courses ranging from undergraduate to masters level.

Private Tutor

Tutor

London

Sep. 2013 - Current

- Tutored students from secondary school to university level on subjects such as Maths, Physics, Computer Science