BENJAMIN WALKER

35 Hart Street, Oxford, OX2 6BN
(+44)7377986793 ⋄ mail@benwalker.co.uk
www.benwalker.co.uk

EDUCATION

University of Oxford January 2022 - December 2025
Doctor of Philosophy in Mathematics

University of Oxford October 2020 - September 2021
MSc in Mathematical Modelling and Scientific Computing *Distinction (72%)*

The University of Manchester September 2016 - June 2020
MMaths&Physics *First (85%)*

Victoria College Jersey September 2013 - July 2016
A-Levels *Four A**
GCSEs *Eight A* & Three A*

TEACHING EXPERIENCE

Lectureship in Applied Mathematics October 2024 - October 2025
Balliol College

Led undergraduate classes and tutorials
Assisted with the undergraduate admissions process

MSc in MMSC: Introduction to Python Course June 2025 - October 2025
Mathematical Institute

Author and teacher

Master's Thesis Supervision July 2022 - September 2023
Mathematical Institute

Ahmed Ammar Naseer: Thesis published in Machine Learning for Healthcare
Jad Mounayer: Awarded the MSc in Mathematical Modelling and Scientific Computing thesis prize

PUBLICATIONS

Structured Linear Controlled Differential Equations: Maximally Expressive and Parallel-in-Time Sequence Models 2025
Conference on Neural Information Processing Systems (Spotlight, Forthcoming)
***Benjamin Walker**, Lingyi Yang, Nicola Muça Cirone, Cris Salvi, Terry Lyons*

Permutation Equivariant Neural Controlled Differential Equations for Dynamic Graph Representation Learning 2025
Conference on Neural Information Processing Systems (Forthcoming)
*Torben Berndt, **Benjamin Walker**, Tiexin Qin, Jan Stühmer, Andrey Kormilitzin*

Learning Dynamic Graph Embeddings with Neural Controlled Differential Equations 2025
IEEE Transactions on Pattern Analysis and Machine Intelligence (Forthcoming)
Tiexin Qin, ***Benjamin Walker****, Terry Lyons, Hong Yan, Haoliang Li*

Theoretical Foundations of Deep Selective State-Space Models 2024
Advances in Neural Information Processing Systems
Nicola Muça Cirone, Antonio Orvieto, ***Benjamin Walker****, Cris Salvi, Terry Lyons*

Combining Hough Transform and Deep Learning Approaches to Reconstruct ECG Signals From Printouts 2024
Computing in Cardiology (CinC) 51 (PhysioNet Challenge 2024 Winner)
Felix Krones, ***Benjamin Walker****, Terry Lyons, Adam Mahdi*

Log Neural Controlled Differential Equations: The Lie Brackets Make a Difference 2024
International Conference on Machine Learning
Benjamin Walker*, Andrew McLeod, Tiexin Qin, Yichuan Cheng, Haoliang Li, Terry Lyons*

From Theoretical Models to Practical Deployment: A Perspective and Case Study of Opportunities and Challenges in AI-driven Cardiac Auscultation Research for Low-Income Settings 2024
PLOS Digital Health
Felix Krones, ***Benjamin Walker***

Multimodal Deep Learning Approach to Predicting Neurological Recovery from Coma after Cardiac Arrest 2023
Computing in Cardiology (CinC) 50
Felix Krones, ***Benjamin Walker****, Guy Parsons, Terry Lyons, Adam Mahdi*

ScoEHR: Generating Synthetic Electronic Health Records using Continuous-time Diffusion Models 2023
Machine Learning for Healthcare
Ahmed Ammar Naseer, ***Benjamin Walker****, Christopher Landon, Andrew Ambrosy, Marat Fudim, Nicholas Wysham, Botros Toro, Sumanth Swaminathan, Terry Lyons*

Dual Bayesian ResNet: A Deep Learning Approach to Heart Murmur Detection 2022
Computing in Cardiology (CinC) 49
Benjamin Walker*, Felix Krones, Ivan Kiskin, Guy Parsons, Terry Lyons, Adam Mahdi*

PERSONAL ACHIEVEMENTS AND AWARDS

1st Place in the George B. Moody Physionet Challenge 2024
Raised £7000 for Cancer Research UK hiking 942 miles from John O'Groats to Land's End
MMaths&Physics highest dissertation grade
PADI-certified rescue scuba diver

REFERENCES

Prof. Terry Lyons - DPhil Supervisor
terry.lyons@maths.ox.ac.uk

Prof. Coralia Cartis - College Supervisor
coralia.cartis@maths.ox.ac.uk