Matt J Bryan BA MEng (Cantab) MIET AMIMechE

PhD Student, Cambridge University Engineering Department

→ specialist in **Machine Learning** for **Mechanics & Control**

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Education

University of Cambridge Oct 2024 –

→ PhD, Engineering

- *'Hybrid machine learning and physics-based modelling for active noise control in automotive vehicles'*
- My PhD research focuses on developing novel hybrid physics-informed machine learning architectures in the context of Active Noise Control (ANC) and is wholly funded by Bose Corporation (Boston MA).
- Member of the Dynamics and Vibration Research Group within the Department of Engineering (CUED).
- I combine nonlinear dynamics, vibration, control, acoustics, signal processing, and machine learning.
- **Supervisors:** Dr Tore Butlin (CUED) and Dr Ole Nielsen (Bose).

University of Cambridge 2020 – 2024

→ BA MEng, Engineering (Mechanical & Control)

- **Grades:** 1^{st} Class Honours (BA), Distinction (MEng), 1^{st} Class in all years.
- **Course highlights:** Advanced Linear Vibration, Random & Nonlinear Vibration, Vehicle Dynamics, Systems & Control, Statistical Signal Processing, Inference, Mathematical Methods - two general years.
- **MEng Project:** 'Pushing the bounds of energy harvesting' - 1^{st} Class.

Experience

→ **Undergraduate Supervisor** - Magdalene College, Cambridge Oct 2024 –

- Small group teaching (in groups of 2-4) for undergraduate engineering students at Cambridge.
- Supervising students for 1^{st} year Mechanics at Magdalene, and 3^{rd} year students for the two optional Dynamics and Vibration courses - discussion of problem sheets and reinforcement of lecture material.
- Additionally, supervising a range 3^{rd} year student 'Bicycle Design' research projects.

→ **Admissions Interviewer** - Magdalene College, Cambridge Dec 2024 –

- Conducting undergraduate admissions interviews and setting technical questions for engineering applicants.
- Completing and reporting on 30+ interviews and partaking in the decision process.

→ **R&D Intern** - Siemens Healthineers Magnet Technology, Oxford 2022, 2023

- Selected for Siemens' Sponsorship Scheme of Cambridge students following a competitive interview process.
- I spent two eight-week summer placements developing superconducting magnets for MRI systems - including work on novel practical vibration measurement techniques for modal identification, and the finite-element simulation of unwanted field-induced vibration to inform mitigating design choices.

Awards

→ **Best Poster** - CUED Division C Graduate Conference 2025 May 2025

- Awarded for my poster presentation on 'ML for Active Noise Control'.

→ **Senior Scholarship** - Magdalene College, Cambridge JUN 2024

- Awarded for a first class result in my Master's degree and continuation to doctoral study.

→ **College Scholarships & Prizes** - Magdalene College, Cambridge OCT 2020 - JUN 2024

- Awarded an academic scholarship every year of my undergraduate degree for achieving first class results, including the Christopherson Prize in my Master's year.

→ **Undergraduate Scholarship** - Institute of Mechanical Engineers OCT 2020 - JUN 2024

- Academic scholarship awarded for my undergraduate degree following a competitive application process.

Projects

→ **'ML for Active Noise Control'** Poster

- *1st Place Poster* - CUED Divison C Graduate Conference 2025
- **Description:** Investigation of machine learning architectures for ANC in nonlinear systems, using a benchmark model to represent a nonlinear automotive system - part of my PhD research.
- **Skills:** Machine learning, nonlinear dynamics, signal processing, data analysis, Python, PyTorch.

→ **'Pushing the bounds of energy harvesting'** MEng Thesis

- **Description:** An investigation into methods for circumventing the 'mass bound' for general energy harvesting systems. This involved the design and testing of a dual translation and rotationally excited piezoelectric harvester to demonstrate a performance benefit in simulation and practice.
- **Skills:** Practical vibration testing, test rig design, data analysis, MDOF simulation, Python.

Additional Information

Computing: Python (inc. PyTorch), MATLAB, TEX, CAD, FEA.

Hobbies: Cycling (road and MTB), choral singing (Queens' College Choir, Portsmouth Cathedral Choir).

Memberships: Institute of Mechanical Engineers (AMIMECHE), Institute of Engineering and Technology (MIET), Cambridge Philosophy Society (FCPS)

Volunteering: Cambridge University Cycling Club (CUCC), DVRG Tea Time Talk organiser (CUED).

Referees

Dr T Butlin — tb267@cam.ac.uk
— University Associate Professor, CUED (Principal PhD Supervisor)

Dr R Roebuck — rlr20@cam.ac.uk
— Director of Studies in Engineering (Part I), Magdalene College, Cambridge