Abhijeet Rao

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EDUCATION

University of Cambridge — Cambridge, UK
MPhil Scientific Computing — *Commencing October 2025*

The University of Edinburgh — Edinburgh, UK
BSc Hons Applied Mathematics – 1st Class — *July 2025*

University of California, Los Angeles — California, USA
Exchange year - Computational and Numerical Methods — *2023 – 2024*

Relevant Coursework: Machine Learning in Python, Applied Numerical Methods, Computational Statistics in R, Dynamical Systems, Mathematical Modelling, Applied Stochastic Differential Equations, Industrial Mathematics, Probability, Statistics, Computing and Numerics, Mathematics of Finance, and Finance, Risk, and Uncertainty.

EXPERIENCE

Autodesk – Dynamics, Data Assimilation Intern — **Summer 2024**
Combine theoretical rigid body dynamics and experimental real world data to create a digital twin of a car-sized drone
- Refactored code base from function based to object-oriented resulting in fast AWS deployment.
- Created a machine learning (ML) algorithm to fit custom physics models of drones onto real world data.
- Researched advanced numerical methods for future performance improvements.

Draup – Machine Learning Intern — **Summer 2023**
Language model that finds skills in job descriptions for Draup's HR CRM platform.
- Performed data cleaning, batching, and advanced feature extraction with Inside-Outside-Beginning tagging.
- Created two named-entity-recognition language models: [1] LSTM RNN architecture, and [2] pre-trained transformer architecture.
- Conducted hyper-parameter tuning and trained language models on data.

Endeavour Rockets – Controls and Simulations Engineer — **Oct – May 2023**
Stop the rotation of a rocket for stable video relay by adding a reaction wheel to counteract spin.
- Tested interface between motor controller and motor with C++ and SimpleFOC.
- Researched PID and Kalman Filter control systems in Python for reaction wheel control.
- Identified appropriate motor, controller, and battery combination to fit design specifications.

Tata Technologies – Data Science Intern — **Summer 2022**
Anomaly detection for battery sensor data that caused unwanted power cut off to motors in EVs.
- Cleaned and pre-processed raw EV charge cycle data using pandas
- Created a feature extraction pipeline that increased speed and efficiency by 90%.

PROJECTS

Hazardous Materials – Industrial Mathematics — **Github Repo**
Visualise the flow of gas through a room using the two dimensional advection diffusion equation.

Stochastic Resonance in Climate Models — **Github Repo**
Final year bachelor's dissertation in modelling ice age and warm age transitions through stochastic differential equations.

SKILLS

Programming: Latex, Python, R(Markdown/Studio), Git, and basic C++ and Julia
Technologies: Jupyter, PyTorch, JAX, NumPy, scipy, sklearn, Pandas, MatPlotLib, equinox, diffrax, TSFresh
Interests: music production, graphic design, technology, Italian cooking, Formula One