

Austin Hill

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Education

MMath in Mathematics, University of Warwick 2019-2023

First class honours

Dissertation: *On Bases in Banach Spaces*

An exposition on the approximation problem and the unconditional basic sequence problem in Banach spaces. Also investigated a ‘weakened’ form of unconditional basic sequence and resolved a question of my supervisor David Bate relating to this.

A Levels, Saffron Walden County High School 2017-2019

Mathematics (A*), Further Mathematics (A*), Physics (A*); AS level Chemistry (A)

IGCSEs, Home Educated 2014-2017

7 A*s, 1 A

Research Interests

Topics in Banach space theory including the linear and nonlinear geometry of Banach spaces, operator theory and different types of bases or biorthogonal systems in Banach spaces. Also, topics relating to analytic number theory including the circle method, the zeta function and additive combinatorics.

Teaching

Graduate Teaching Assistant, University of Warwick 2022-2023

Supervised a group of first year Mathematics undergraduates, helping them with core modules including algebra, analysis and differential equations as well as marking assignments.

Skills

Programming - C, C++, Python, Java and MATLAB

Other - \LaTeX , Linux

Work Experience

BAE Systems Digital Intelligence, Software Developer From Autumn 2023

- Part of a team designing high performance multi-threaded, firmware accelerated modern C++ applications for digital signal processing
- Designed and developed C++ software to orchestrate and control an array of hardware for a brand-new system, using ZeroMQ to centrally collate live metrics to a Grafana dashboard
- Involved in migrating our software to run on Debian 12, fixing a number of critical issues
- Developed a prototype internal VSCode LLM plugin for automated unit test and documentation generation, implemented in python using HuggingFace transformers and deployed on AWS

- Helped a team migrate to a Bazel build system for C++ software

Roke, Data Scientist

Summer 2022

- Used modified heuristic algorithms for the Vehicle Routing Problem to solve a task related to coverage path planning over a probability distribution
- Accounted for non-convex domains by using a modified version of Dijkstra's algorithm

BAE Systems Applied Intelligence, Data Scientist

Summer 2021

- Designed and implemented algorithms in python for automatic content extraction
- Created a weighted graph database to find related words by statistical significance
- Queries were over 500 times faster than the current model built by another team within the company, while maintaining high quality results

Extracurricular

French Horn - Former principal horn and tour secretary of the University of Warwick Symphony Orchestra; have recently been playing for semi-professional and top amateur orchestras in London.

Piano - Keen amateur pianist with a soft spot for Beethoven sonatas.

Juggling - I can comfortably juggle 7 balls and 5 clubs.