Daniel Roebuck

Coventry, UK   Daniel.Roebuck@warwick.ac.uk   (+44) 7578 942444   05/11/2024

Education

University of St Andrews (2020-24) | MMath Mathematics

- High first in June 2024.
- Average honors grade: 19.3/20 (a first class degree is a GPA above 16.5).
- Dissertation title: A Framework for Handling Partial Information, supervised by Professor Peter Cameron. Dissertation grade: 19.6/20.

Awards and Achievements

Jul 2024	**IMA Graduate Prize Winner** (two students in each UK university are awarded free IMA membership)
May 2024	**Duncan Prize** (for the best dissertation in Mathematics and Statistics)
May 2024	**Miller Prize Nomination** (nominated for best student across Arts and Science).
May 2024	Dean's List Award (for 1st class grade average across a year)
Sept 2023	**Mathematics medal** third level MMath. (for best grades across 3000 level modules)
Aug 2023	Dean's List Award (for 1st class grade average across a year)
Sept 2022	**Second Prize** Carnegie Trust National Poster Competition (for internship with Professor Kenneth Falconer)
June 2022	**Mathematics medal** third level MMath.
May 2022	Dean's List Award
June 2021	**Tullis Medal** and Prize (for best grades in second year Pure Mathematics)
June 2021	Dean's List Award

Academic Experience

Research experience | Carnegie Undergraduate Scholar | Summer 2022

- Did original research into the topology of various fractals in St Andrews under the supervision of Professor Kenneth Falconer.
- Awarded second Prize in the Carnegie Undergraduate Scholar Poster competition.
- Selected to feature in the Carnegie Trust Investors Report.

Research experience | Polymath Jr. | Summer 2021

- Did original research as part of an international group of undergraduates under the supervision of Professor Eric Rowland and contributed significantly to the paper published in the Electronic Journal of Combinatorics (see below).

Publications

· Berera, S., Roebuck, D., and 6 others. The lexicographically least square-free word with a given prefix, Electronic Journal of Combinatorics **30** (2023), paper 3.11, 43 pp arXiv:2210.00508 | DOI: 10.37236/11659

Employment

Mathematics | Lean theorem formalising | Jun-Aug 2023 (+ occasional one offs)
· Contracted to formalise mathematical arguments in the Lean Theorem Verification language.

Software development | Chemical plant | 2018-2020 (Part time)
· Automated various data processing tasks using Python.
· Designed software to be able to handle missing data.
· Used Git for version control.

Voluntary work

St Andrews University Mathematics Society | President | 2022-2023
· Significantly increased the scope of the mathematics society, increasing engagement and doubling the repertoire of events, both social and academic.
· Sought out enthusiastic students, doubling the committee size from 7 to 15.
· Initiated weekly study groups on Knot Theory and Game Theory.
· Expanded the Scottish Universities Mathematics Olympiad to be an inter-university collaboration. Chaired weekly meetings for sorting details and compiling the competition paper.
· Helped create a safe, welcoming environment by checking in with and including all participants at social events.

St Andrews University Mathematics Society | Secretary | 2021-2022
· Introduced regular problem workshops.
· Responsible for running the St Andrews branch of the Imperial College Mathematics Competition (now Imperial-Cambridge Mathematics Competition).
· In charge of overseeing and compiling the paper for the Scottish Universities Mathematics Olympiad. This involved creating, solving and tweaking countless Olympiad-style mathematics problems.
· Improved the engagement and scope of the society, earned informal title of "SUMS poster boy".

Tutoring | In-class support | 2019-2020
· Met with a struggling group of school students twice a week for 1-1 mathematics tutoring and encouragement.

Software development | Programming club/competitions | 2012-2017
· Attended a weekly under 18s programming club, where we would work and help each other with self-determined programming tasks.

- Partook in various weeklong team hackathons (programming competitions) where we would work together to plan and develop helpful pieces of software.