Jake Faulkner

Curriculum vitæ

Profile

Recent Mathematics and Computer Science graduate with a stellar academic record, and an array of technical skills. Seeking work that engages my analytical skills, with a particular interest in data science and research roles. A demonstrated commitment to excellence across a broad spectrum from highly theoretical Mathematics to applied Computer Science in academia, industry and personal pursuits.

Education

Feb 2021 – Mar 2023 **Master of Science in Mathematics with Distinction**, *University of Canterbury*, Christchurch, New Zealand, GPA: 8.50

Feb 2018 – Dec 2020 **Bachelor of Science in Computer Science and Mathematics**, *University of Canterbury*, Christchurch, New Zealand, GPA: 8.88

Skillset Overview

Advanced Proficiency In	C/C++, Haskell, Python
Competency In	C#, JavaScript/TypeScript, SQL (SQLite, PostgreSQL)
Key Technologies	Numpy, Scipy, Scikit-Learn, Tensorflow, Flask
Networking Background	Containers, Linux Proficiency, Sysadmin
Research Experience	Abstract Algebra, Coding Theory, Geometry, Linear Algebra

Experience

Jun 2023 - Nov 2023 **PhD Candidate**, *Vrije Universiteit Brussel*, Brussels, Belgium
Developing research following on from work undertaken in Master's thesis. Worked on grant applications and proposals for funding, and continued to develop research skills. Left due to a desire to pursue a different working direction, with a focus on application and impact.

2019-2023 **Tutor**, *University of Canterbury*, Christchurch, New Zealand
A tutor for both the computer science and mathematics departments. Tutoring courses from first-year to third-year. Courses ranged from introductory programming courses, to highly technical courses in real analysis and abstract algebra. Tutoring responsibilities included marking attendance and assignments, delivering content, consulting on course material, providing 1-on-1 help for students and lab-style tutorials.

2018–2023 **Private Tutor**, *Self-employment*, Christchurch, New Zealand
Private tutoring sessions with students on an as-needed hourly basis. Providing a tailored approach that met individual students' needs and tracked their progress.

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Summer 2019-2020 **Intern Software Developer**, *Verizon Connect*, Christchurch, New Zealand
Built a mock testing framework to allow other teams to test against mock proprietary APIs for their fleet management software. Gained experience working with teams in a corporate environment to deliver results in a self-directed project.

Scholarships and Awards

2023 **UC Research Student Publication**, *Dean of Postgraduate Research*, $1,000, Awarded for publishing a paper in a Scopus indexed journal.

2021 and 2022 **College of Engineering Master's Scholarship**, *College of Engineering*, approx. $15,000, Covering tuition fees based on academic background for a Master's project.

2021 **UC Senior Scholarship**, *University of Canterbury*, $2,000, Awarded to the top 25 Bachelor's or Honour's graduates ranked by GPA.

2020 and 2021 **UC Mathematics and Statistics Scholarship**, *Department of Mathematics and Statistics*, $5,000, Recognising academic achievement in Mathematics.

2020 **Tait Communications Undergraduate Scholarship**, *CSSE Department and Tait Communications Ltd.*, $5,000, Recognising achievement in Computer Science with potential for impact in industry.

Research

Master's Thesis

Title *Unitals in Projective Planes Revisited*

Date December 2022

Supervisor Geertrui Van de Voorde

Abstract This thesis reviews unitals in finite projective planes, describing the literature and producing new results on Buekenhout-Tits unitals and the intersection of Buekenhout-Metz unitals.

Papers

Title *On the Equivalence, Stabilisers, and Feet of Buekenhout-Tits Unitals*

Publication Date May 2023

Co-Authors Geertrui Van de Voorde

Abstract This paper addresses problems concerning Buekenhout-Tits unitals in $\mathrm{PG}(2, q^2)$, where $q = 2^{2e+1}$ and $e \geq 1$. We show all Buekenhout-Tits unitals are equivalent under $\mathrm{PGL}(3, q^2)$, describe their stabiliser in $\mathrm{P\Gamma L}(3, q^2)$ and investigate the combinatorial properties of their feet.

References

References available upon request.