Archie Walton

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Bristol, UK

RESEARCH INTERESTS

My main research interests are within streaming algorithms, focusing on graphs. In the first two months of my PhD, I have been studying algorithms for approximating bipartite maximum matchings in multiple passes.

EDUCATION

PhD in Computer Science Sept. 2024 — 2028
University of Bristol, United Kingdom
PG Scholarship / Studentship: Funded by EPSRC
Supervised by Dr. Christian Konrad.

Master of Engineering in Mathematics and Computer Science Sept. 2020 — June 2024
University of Bristol, United Kingdom
Graduated as the top four year student in the School of Computer Science with a 87.8% average.

PROJECTS

Exponential-time Algorithms for Approximating the Hardcore Partition Function Spring 2023
Bachelor's Project supervised by Dr. John Lapinskas

- This project generalises an algorithm for approximately counting independent sets to a model in which we assign different weights to each independent set based on its size.
- We start by considering the families of graphs for which there is an FPTAS for the value.
- We then use a potential function to describe the complexity of an input graph.

Mark awarded: 95

Models of Infinite Time Computation Sept. 2023 — June 2024
Master's Project supervised by Prof. Philip Welch
Project considering the computational power of Turing Machines which have a defined behaviour for transfinite time steps.
Mark awarded: 75

EMPLOYMENT

Teaching Assistant Sept. 2022 — Present
University of Bristol

- Supported teaching on algorithms units from first year through to masters level.
- Ran drop-in sessions for students to ask any questions related to the course.
- Supported teaching in large group sessions.

EPSRC funded summer research internship Summer 2023
University of Bristol
Supervised by Dr. Steven Ramsay and Eddie Jones
Project focusing on efficiently representing equivalences between terms of a language to allow rewriting of programs. Moving towards an automated verification system for examples for functions in Haskell.

OTHER EXPERIENCE

Programming languages: Knowledge of Haskell, Python.
ICPC Competitive Programming Competitions 2023, 2024
21st in the 2024 UKIEPC competition, making it through to the regional round.
University of Bristol Lifesaving Club 2024 — 2025
Treasurer

REFERENCES

Dr. Christian Konrad christian.konrad@bristol.ac.uk