Eddie Jones

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I am a lecturer in programming languages and compilers at the University of Bristol. My research to date has focused on lightweight methods for verifying functional programs, including refinement type systems and cyclic, equation reasoning.

Interests: **program logics**, **cyclic proofs**, **under-approximate reasoning**, **equational reasoning**.

PUBLICATIONS

Higher-order MSL Horn Clauses — POPL January 2023

Authors: Jerome Jochems, Eddie Jones, and Steven Ramsay.
Publication: Proceedings of the ACM on Programming Languages, Volume 7, Issue POPL • DOI: 10.1145/3571262.

CycleQ — PLDI June 2022
an efficient basis for cyclic equational reasoning

Authors: Eddie Jones, C.-H. Luke Ong, and Steven Ramsay.
Publication: Proceedings of the 43rd ACM SIGPLAN International Conference on Programming Language Design and Implementation • DOI: 10.1145/3519939.3523731.

Intensional datatype refinement — POPL January 2021
with application to scalable verification of pattern-match safety

Authors: Eddie Jones and Steven Ramsay.
Publication: Proceedings of the ACM on Programming Languages, Volume 5, Issue POPL • DOI: 10.1145/3434336.

APPOINTMENTS

Lecturer in Programming Languages and Compilers — University of Bristol 2023–

Research Associate on Taint-Analysis for Erlang — University of Bristol 2023–2023

- With funding from Meta, we are pursuing an extension of our intensional datatype refinement type system to Erlang. This project aims to statically approximate the flow of private information through a program in order to ensure compliance with data protection guidelines.

Program-Level Teaching Assistant — University of Bristol 2021–2022

- As a program-level teaching assistant, I led tutorials designed to cross module boundaries and give students a more comprehensive understanding of computer science outside the curriculum.
- I also contributed content to this series, designing worksheets on bisimulation and the topological aspects of functional programming languages.

Teaching Assistant — University of Bristol 2018–2023

- During my undergraduate degree and PhD, I took the opportunity to be a teaching assistant across a number of units including:
  - Functional Programming
  - Types & Lambda Calculus
  - Programming Languages and Computation
  - Advanced Topics in Programming Languages

This role involved leading tutorial-like problem classes, helping the students with lab working, as well as marking homework sheets.

- For the Functional Programming and Types & Lambda Calculus units, I have previously taken on the additional responsibility as lead teaching assistant with associated administrative duties and the task of checking the exam solutions.

EDUCATION

PhD Computer Science — University of Bristol 2019–

- Numerous contributions to the research group's seminar series.
- Oregon Programming Languages Summer School (2021)
- Midlands Graduate School in the Foundations of Computing Science (2021)

BSc (Hons) Mathematics and Computer Science — University of Bristol 2016–2019

- During my undergraduate degree, I found that fluency in mathematical thinking gave me the analytical skills necessary to shed new light on the practical challenges faced in computer science. I averaged a first-class mark of 85% across a range of modules including:
  - Language Engineering
  - Theory of Computation
  - Types & Lambda Calculus
  - AI & Logic Programming
  - Set Theory
  - Combinatorics
  - Dynamic Systems
  - Machine Learning
- Research experience:
  - *The Dynamics of Dialects*. For my undergraduate dissertation, I used a model of natural language acquisition to investigate, through a series of simulations, how the structure of social networks influence the propagation of cultural symbols. It received a first-class mark of 87%.
  - *Applied Optimisation Research Internship*. In my second year as an undergraduate student, I was a research intern in the maths department. This project considered the problem of designing an optimal layout for a car park. It involved a mixture of calculus, geometry, and numerical simulation performed in MATLAB.
- Awards:
  - Top Mathematics and Computer Science Graduate 2019
  - Top 10 Second Year Student in Computer Science, awarded by Netcraft
  - Top 5 First Year Student in Computer Science, awarded by Bank of America Merrill Lynch

A-Levels — Peter Symonds College 2014–2016

- Mathematics A*
- Further Mathematics A
- Physics A
- (AS) Economics A

LANGUAGES & TOOLS

Advanced:

- Haskell
- Functional Programming
- Mathematics

Experience With:

- C
- Rust
- Python
- Linux
- Git
- LaTeX