Dr Jonathan Beaumont MEng PhD

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Profile

I am a PhD computer engineer with experience in developing algorithms and software for conventional and cutting-edge systems, designing and testing electronics, interfacing hardware and software, and researching and scientific writing skills.

My career has involved the development, in multiple languages, of software for electronics research, back-end development of tools and the design and development of algorithms for applications targeting new computer-architectures under research and the publishing of the results. My goal is to develop new systems, algorithms and software that efficiently address the challenges faced by existing and future complex applications.

Work Experience

April 2018 - Present

Postdoc Research Associate, Imperial College London

- Working on the POETS project (poets-project.org) developing applications for a novel event-driven parallel system architecture featuring thousands of hyper-threaded RISC-V cores embedded in a fast communications infrastructure.
- This project requires collaboration with colleagues at Imperial College and at other UK universities: Cambridge, Newcastle and Southampton.
- Developing asynchronous algorithms which take advantage of the communications infrastructure of POETS, allowing applications to use decentralized synchronisation.
- Researching and developing a Dissipative Particle Dynamics simulator for the POETS platform, which models the behaviours of complex fluids at a molecular level. The results of this have been published and achieve 100x speedup over a serial form of this simulator.

September 2017 – March 2018

Guest Relations Staff Member, The O2, London

- Working in a large team at The O2 and assisting with the security staff to ensure customers have a safe, secure and enjoyable event.

September 2014 - July 2017

Postgraduate Demonstrator, Newcastle University

- Aid in the teaching of undergraduate students in practical sessions.
- Designed introductory C-programming practicals for first year undergraduate students, leading demonstrators in the sessions and arranging the marking of code and reports.
- Other modules worked on include building a basic microprocessor system, and Finite State Machine theory using FPGAs

Core Skills

- Fluent programming languages: C++, C, Python, Java, JavaScript.
- Familiar programming languages: Haskell, Assembly.
- Knowledge of Git and GitHub for version control and collaboration (github.com/jrbeaumont).
- Time-management gained through self-regulation of my workload during my PhD.
- Scientific communication skills through writing papers and articles and presenting my work.
- Collaborative working with colleagues both in-person and virtually.

Education

September 2014 - January 2018

PhD Computer Engineering, Newcastle University

Research:

- My main research interest is in asynchronous methods for software and design, verification properties and synthesis of asynchronous circuits.
- My project involved developing a domain-specific language for specifying asynchronous circuits through behaviours. This is called *Concepts*. I developed a tool called *Plato* for translating this into a synthesizable form (github.com/tuura/plato).
- I learned several forms of graphical models, such as Finite State Machines, and Petri Nets which are used for specifying asynchronous circuits.

Other projects:

- I worked as part of the software development team on several software tools. We work together and aim to integrate them to streamline their usage.
- I aided the development of a process-mining tool *pgminer*, featuring a Haskell library for process mining, and automated concurrency extraction (github.com/tuura/process-mining).
- This team develops *Workcraft*, a Java software suite which features the tools developed by members of the team integrated as plug-ins. These all aid in the design of asynchronous circuits, generating models which are verified and synthesized. During my time on the team, I developed features, integrated *Plato* and was the main macOS developer (workcraft.org).

September 2010 - July 2014

Electronic and Computer Engineering MEng, Newcastle University

First Class Honours

This degree included both computer science and electronics modules and provided opportunities for projects to use learned skills from both disciplines.

Relevant modules:

- Algorithm Design and Analysis
- Understanding Concurrency
- Computer Systems and Microprocessors
- Embedded Systems

Projects:

- Team project to design and build a maze navigating robot. I oversaw the control system, taking input from sensors to determine directions, mapping the maze, and controlling to the motors to move the robot.
- I designed and built a device which recorded the output from an electronic drum kit, consisting of programmed PICs and a custom microprocessor, and a PC application which accurately played back recordings.

September 2008 - July 2010

Greenhead College, Huddersfield

A-Levels: Computing A, Mathematics B, Physics B - AS level: Chemistry B

September 1995 - July 2008

Huddersfield Grammar School, Huddersfield

10 GCSEs at A* - C grades

Interests

I enjoy in theatre, particularly musical theatre, and I try to see new and interesting plays whenever possible. During my time at Newcastle University, I was a member of the theatre society where I helped rig plays, design and build sets, and was a sound engineer on several musicals. This involved the preparation and control of the microphones for a live band and radio microphones actors.

A fan of Crystal Palace FC, I go to watch matches at Selhurst Park whenever possible.

References available on request