

Jonathan Beaumont: Curriculum Vitae

Address: 56 Adelaide Avenue, London, SE4 1YR Mobile: 07871959048

E-mail: j.r.beaumont@ncl.ac.uk GitHub: github.com/jrbeaumont

Education

2014 – Present, PhD Computer Engineering, Newcastle University

Research interests:

- Asynchronous circuit design methods
- Development of software tools for hardware design automation
- Event log mining and concurrency extraction

Publications

Conference papers:

- [1] J. Beaumont, A. Mokhov, D. Sokolov and A. Yakovlev, "Compositional design of asynchronous circuits from behavioural concepts," *2015 ACM/IEEE International Conference on Formal Methods and Models for Codesign (MEMOCODE)* doi: 10.1109/MEMCOD.2015.7340478
- [2] J. Beaumont, "Plato: a tool for behavioural specification of asynchronous circuits", *International Conference on Application of Concurrency to System Design (ACSD 2017)*, pp. 68-73 doi: 10.1109/ACSD.2017.14

Book chapters:

- [3] A. Mokhov, J. Carmona, J. Beaumont. "Mining Conditional Partial Order Graphs from Event Logs", M. Koutny, J. Desel, J. Kleijn (Eds.): *Transactions on Petri Nets and Other Models of Concurrency XI in Lecture Notes in Computer Science*, vol. 9930, pp. 114-136, Springer, 2016. doi: 10.1007/978-3-662-53401-4_6

Journal articles:

- [4] J. Beaumont, A. Mokhov, D. Sokolov, A. Yakovlev. "High-level asynchronous concepts at the interface between analogue and digital worlds", *IEEE Transactions on Computer-Aided Design, Special Issue on Circuit and System Design Automation for Internet of Things*, accepted and in press. doi: 10.1109/TCAD.2017.2748002

Skills developed and Projects:

- My main research project is the development of a domain-specific language for formal specification of asynchronous circuits, named *Concepts*.
- Knowledge of asynchronous systems, design methods, verification properties and synthesis.
- An understanding of several forms of graphical modelling methods, such as Finite State Machines, Petri Nets, Signal Transition Graphs and Conditional Partial Order Graphs.
- FANTASI project: accelerating network analysis on FPGAs (1000x over conventional PC cluster).
- I work as part of a software development team on several software tools. We work together and aim to integrate them to streamline their usage (github.com/jrbeaumont).
- One such tool I have developed is *Plato*. This is written in Haskell and implements features of my research project (github.com/tuura/plato).
- Another tool I have aided the development of is *pgminer*, a Haskell library for process mining, which features automated concurrency extraction (github.com/tuura/process-mining).
- The main tool our team develops is *Workcraft*, Java software to aid in graph design for asynchronous systems, featuring many of the tools the team develops integrated as plug-ins. I act as the main macOS developer for Workcraft (workcraft.org).

2010 – 2014, First class honours, Electronic and Computer Engineering MEng, Newcastle University

Relevant modules:

- Design and Test of Digital Systems
- Real-time and Embedded Systems
- Signals and Communication
- Industrial Automation and Robotics

Skills developed and Projects:

- Worked as part of a team to design and build a robot which successfully navigated a maze. I oversaw the control system, dealing with input from sensors to determine possible directions, and using this information to map the maze, and control the motors to move the robot.
- Designed and built an Electronic Drum Kit Recording device consisting of programmed PICs and a microprocessor to record the output from multiple rubber pads from the electronic drum kit, and wrote a PC application to play back what was recorded. This project achieved the award for Best Final Year Project in Microelectronic System Design.

Work Experience

2014 September – Present, Postgraduate Demonstrator, Newcastle University

- Aid in the teaching of undergraduate students in practical sessions, and working through problems they face with them.
- Worked in a group of demonstrators in a microprocessor system practical, helping students to learn the processes of designing, building and programming of a basic microprocessor system.
- Lead a team of demonstrators in a C-programming practical, helping the students with the basics of programming. This module saw the students submit reports and code for assignments, the marking of which I organised, and was carried out by the myself and the demonstrators.
- On my own, I prepared and demonstrated for an experiment to teach students Finite State Machine theory using FPGAs.

2012 August – October, Report Binder/Helper, Alps – Alkemygold, Huddersfield

2011 May - October, Decontamination Operative, Church Street Dental Practice, Littleborough

Additional Skills

- Proficient in Java, C and C++.
- Familiar with Haskell and Assembly language.
- Communication skills gained through teaching, and presentations of my research at national and international conferences.
- Through the authoring and co-authoring of multiple papers and articles, as well as a blog (jrbeaumont.github.io/concepts-blog/), I can communicate in a scientific manner, and a more colloquial manner.
- I have time-management skills gained through self-regulation of my work load throughout my PhD, where I have had to balance software development, demonstrating duties, regular reading of articles for research and the writing of research documents.
- Full and clean UK driving license.
- I am trained in Basic Life Support, both through University and during my employment at Church Street Dental practice.