

Bobby R. Bruce

Curriculum vitae

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EDUCATION

September 2014 – [present]

University College London, U.K.

PhD in Software Engineering

Originally under the supervision of Prof. Mark Harman and later, after Prof. Harman's move to Facebook, Dr Justyna Petke, I am currently working towards a PhD in Software Engineering. My research focuses on genetic improvement, the application of search-based techniques for the automatic improvement of software. I am currently investigating genetic improvement's application to the complex task of automatic parallelisation of software. At the time of writing I have six papers published in respected academic conferences and journals, as well as two technical reports, with a total citation count of 72.

August 2009 – December 2013

Edinburgh Napier University, U.K.

Bachelors of Engineering Software Engineering 1st Class honours

I graduated from Edinburgh Napier University with 1st Class Honours in Software Engineering (BEng). Upon graduation I received the Edinburgh Napier University medal for my exemplary academic performance and the Adobe Edinburgh prize for Software Engineering for obtaining that year's highest grading for my honours project. The project was a study into NEAT, an algorithm for the creation of Artificial Neural Networks using Evolutionary Computation.

RELEVANT WORK EXPERIENCE

September 2017 – [present]

Richer Education, London, U.K.

Lead Coding Tutor

I am currently working as lead coding tutor at Richer Education in London. This role involves teaching a weekend class, twice a month, to students aged between 9 and 14. The class focuses on the Python programming language and I am responsible for planning, preparing, and teaching the lessons.

February 2014 – August 2014

Synopsys, Livingston, U.K.

Research and Development Engineer

As part of a small team, I participated in the creation of an Eclipse plug-in that aids developers in the creation and simulation of complex electronic systems.

The position involved using Java to engineer a large application implemented using a MVC architectural pattern. The team functioned using the Agile Development methodology with a strong emphasis on collaboration between team members.

July 2011 – July 2012

Microsoft Corporation, Dublin, Ireland

Software Development Engineer

Working as part of the Windows and Windows Live Localisation Team, my role within Microsoft was to create, manage, maintain, upgrade, and provide customer service for various pieces of software used by management and language experts to measure the linguistic quality of Microsoft software. The software systems I worked with varied from simple desktop productivity tools to complex cloud-based applications. Due to the relatively small size of the team, I was fortunate enough to oversee and participate in all aspects of the software development life-cycle; from inception through to testing and maintenance. In 2012 I won the Microsoft Engineering Excellence Award for the development of a mission-critical linguistic term analysis system.

May 2010 – August 2010

Institute for Stem Cell Research, Edinburgh, U.K.

Software Engineer

Primarily using Java, I created a user-friendly interactive graphical representation of data contained within a complex database of scientific information.

TECHNICAL REPORTS

2017 **Approximate Oracles and Synergy in Software Energy Search Spaces**¹

Bobby R. Bruce, Justyna Petke, Mark Harman, and Earl T. Barr
UCL Dept. of CS: RN/17/01

2017 **Deep Parameter Optimisation for Face Detection Using the Viola-Jones Algorithm in OpenCV: A Correction**

Bobby R. Bruce
UCL Dept. of CS: RN/17/07

¹An extended version of this technical report is currently under review, available upon request

PUBLICATIONS

- 2017 **Towards automatic generation and insertion of OpenACC directives²**
Bobby R. Bruce and Justyna Petke
- 2017 **Deep Parameter Optimisation on Android Smartphones for Energy Minimisation — A Tale of Woe and Proof-of-concept**
Mahmoud A. Bokhari, Bobby R. Bruce, Brad Alexander, and Markus Wagner
GECCO Companion '17
- 2016 **Deep Parameter Optimisation for Face Detection Using the Viola-Jones Algorithm**
Bobby R. Bruce, Jonathan M. Aitken, and Justyna Petke
SSBSE '16
- 2016 **Optimising Quantisation Noise in Energy Measurement**
William B. Langdon, Justyna Petke, and Bobby R. Bruce
PPSN '16
- 2015 **Specialising Guava's Cache to Reduce Energy Consumption**
Nathan Burles, Edward Bowles, Bobby R. Bruce, and Komsan Srivisut
SSBSE '15
- 2015 **Energy Optimisation via Genetic Improvement : A SBSE technique for a new era in Software Development**
Bobby R. Bruce
GECCO Companion '15
- 2015 **Reducing Energy Consumption Using Genetic Improvement**
Bobby R. Bruce, Justyna Petke, and Mark Harman
GECCO '15

ACADEMIC AFFAIRS

Listed below are the conferences and journals which I have reviewed papers for.

- The 2nd and 3rd Workshop on Genetic Improvement (2016 + 2017)
- IEEE Transactions on Evolutionary Computation (2016)
- Empirical Software Engineering (2016)
- Applied Soft Computing (2017)

Listed below are conferences and journals in which I served as a co- or sub-reviewer.

- TSE (2017)
- FSE (2017)
- INFOSOF (2017)

- MobileSoft (2016 + 2017)
- SSBSE (2016)
- ASE (2016)
- ICSME (2016)
- ICSE (2015)
- MSR (2015)

UCL TEACHING

During my PhD I have taken up opportunities to aid in classes taught at UCL. Typically this meant being a teacher's assistant — supervising students in the carrying out of programming exercises and/or guiding them in the completion of a software projects. In all the classes listed below I was heavily involved in the marking and grading process.

September 2015 – May 2015

Teacher's Assistant

Software Systems II

September 2016 – December 2016

Teacher's Assistant

Tools And Environments

January 2017 – May 2017

Teacher's Assistant

Object-Oriented Programming

September 2017 – December 2017

Teacher's Assistant

App Design

AWARDS

- 2014 **Adobe Edinburgh Prize for Software Engineering**
Reviewed for my Honours project — 'The Effectiveness of NEAT Generated ANN in Sequentially Learned Tasks'
- 2014 **Edinburgh Napier University Medal**
Recieved for exemplary academic performance
- 2012 **Microsoft Ireland Engineering Excellence Award**
Received for my work on the development of a linguistic term analysis system

²Paper currently under review, available upon request