Elizabeth Polgreen

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Education

2019 – present **Postdoctoral Research Scholar**, *Computer Science*, The University of California, Berkeley.
I work in Professor Sanjit Seshia's group. I am interested in integration of synthesis into verification techniques.

2016 – 2019 **PhD candidate**, *Computer Science*, The University of Oxford.
Program synthesis without syntactic templates.
Thesis submission: August 2019.
Viva: November 2019

2010 – 2011 **Masters of Engineering**, *Electrical and Electronic Engineering*, The University of Cambridge.

2007 – 2010 **Bachelor of Arts**, *Electrical and Electronic Engineering*, The University of Cambridge.

Publications

CounterExample Guided Inductive Synthesis modulo Theories, *A. Abate, C. David, P. Kesseli, D. Kroening, E. Polgreen*, Computer Aided Verification (CAV), 2018.

Automated Formal Synthesis of Digital Controllers for State-Space Physical Plants, *A. Abate, I. Bessa, D. Cattaruzza, L. Cordeiro, C. David, P. Kesseli, D. Kroening, and E. Polgreen*, Computer Aided Verification (CAV), 2017.

DSSynth: An Automated Digital Controller Synthesis Tool for Physical Plants, *A. Abate, I. Bessa, D. Cattaruzza, L. Chaves, L. Cordeiro, C. David, P. Kesseli, D. Kroening, and E. Polgreen*, Automated Software Engineering (ASM), 2017.

Automated Experiment Design for Efficient Verification of Parametric Markov Decision Processes, *E. Polgreen, V. Wijesuriya, S. Hasaert, A. Abate*, Quantitative Evaluation of SysTems (QEST), 2017.

Data-efficient Bayesian Verification of Parametric Markov Chains, *E. Polgreen, V. Wijesuriya, S. Haesaert, A. Abate*, Quantitative Evaluation of SysTems (QEST), 2016.

Work in progress or under submission

Probabilistic IC3: a New Symbolic Model Checking Algorithm for Markov Chains, *E. Polgreen, M. Brain, M. Fraenzle, A. Abate*.

CounterExample Guided Neural Synthesis, *E. Polgreen, R. Abboud, D. Kroening*.

Talks

CounterExample Guided Inductive Synthesis modulo Theories, Computer Aided Verification (CAV), 2018.

Automated Experiment Design for Efficient Verification of Parametric Markov Decision Processes, Quantitative Evaluation of SysTems (QEST), 2017.

Data-efficient Bayesian Verification of Parametric Markov Chains, Quantitative Evaluation of SysTems (QEST), 2016.

Co-supervision

MSc project **CounterExample Guided Neural Synthesis**.

Service

Program committees.
SYNT 2019

Reviewer.
Acta Informatica, SYNT 2019, Robotics: Science and Systems 2017, SOFSEM-FOCS2017, QEST 2016, QEST 2017,13th International Workshop on Discrete Event Systems

Experience

June 2018 – September 2018 **Software Development Intern**, *Amazon Web Services, Dresden*.
Continuation of previous internship applying formal verification techniques to C code for an x86 hypervisor

August 2017 – October 2017 **Software Development Intern**, *Amazon Web Services, Dresden*.
Development of analysis tools based on formal methods for hot-patching an x86 hypervisor

September 2015 – March 2016 **Research Assistant in Verification**, *Department of Computer Science, University of Oxford*.
Working with Professor Alessandro Abate on application of machine learning techniques in verification. This work produced the paper published at QEST 2016

September 2013 – August 2015 **Research Support**, *Department of Computer Science, University of Oxford*.
Lead aspects of research project execution over a broad variety of research projects within the Systems Verification and Validation group.

January 2013 – August 2013 **Electronics and Software Engineer**, *Peach Innovations*, Cambridge.
Manufacture, testing and debugging of real-time rowing instrumentation systems. Analysis of system output data with view to new product development.

August 2011 – January 2013 **Electronics and Software Engineer**, *Eg Technology*, Cambridge.
Design engineer developing electronics hardware and software for a variety of consumer and medical devices. Main contributor of C code to embedded software projects using ARM microcontrollers. Further experience in LabVIEW, and contributing to larger team projects written in C#.

Teaching

Lecture **Introduction to IC3**, Computer Aided Verification Course, Oxford.

Work experience **Key Stage 2 work experience**, Various secondary schools in Oxfordshire.

Other skills and interests

2010 – 2011 **President of Cambridge University Women's Boat Club**.
I lead a team of 30 athletes to compete at national and international events. I worked with the executive committee and the coaching team to ensure smooth day-to-day running of a high-performing club.

2017 – 2019 **Marathon Coach - Oxford University Canoe Kayak Club**.
I run weekly flat-water kayaking sessions for Oxford University students, and organise the annual varsity race

2011 – 2014 **Elite lightweight rower**.
Four-time British Champion. I represented England in 2012 and 2014.