

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**, *Computer Science*, The University of Oxford.
Program synthesis without syntactic templates.
- 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 – **Software Development Intern, Amazon Web Services, Dresden.**

September 2018 Continuation of previous internship applying formal verification techniques to C code for an x86 hypervisor

August 2017 – **Software Development Intern, Amazon Web Services, Dresden.**

October 2017 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 – **Research Support, Department of Computer Science, University of Oxford.**

August 2015 Lead aspects of research project execution over a broad variety of research projects within the Systems Verification and Validation group.

January 2013 **Electronics and Software Engineer, Peach Innovations, Cambridge.**

– August 2013 Manufacture, testing and debugging of real-time rowing instrumentation systems. Analysis of system output data with view to new product development.

August 2011 – **Electronics and Software Engineer, Eg Technology, Cambridge.**

January 2013 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.