

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 – **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.