Dr. Elizabeth Polgreen

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Education

2020 – present **Lecturer**, *Laboratory for Foundations of Computer Science*, University of Edinburgh.
My research interests are in program synthesis algorithms, applications of program synthesis and integration of synthesis into verification techniques.

2019 – 2020 **Postdoctoral Research Scholar**, *Computer Science*, The University of California, Berkeley.

2016 – 2019 **PhD**, *Computer Science*, The University of Oxford.

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.

Relevant Publications

2022 **Synthesis and Satisfiability Modulo Oracles**, *E. Polgreen, A. Reynolds, S.A. Seshia*, International Conference on Verification, Model Checking, and Abstract Interpretation(VMCAI).

2021 **The SyGuS Language Standard Version 2.1**, *S. Padhi E. Polgreen M. Raghothaman A. Reynolds A. Udupa*.

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

2017 **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).

Invited Talks

CounterExample Guided Inductive Synthesis Modulo Theories, The Simons Institute for the Theory of Computing, 2021.

Supervision

2017-2018 **CounterExample Guided Neural Synthesis**, *University of Oxford*, MSc project.

2020-2021 **Metagrammars for syntax-guided synthesis**, *UC Berkeley*, Undergraduate research project.

2020-2021 **Online-learning for SMT-solver algorithm selection**, *UC Berkeley*, Undergraduate project.

2021-2022 **Portfolio solving for Syntax-Guided Synthesis**, *Universty of Edinburgh*, 2021.

Service

Program committees.
CAV 2022, FMCAD 2022, SYNT 2021 (chair), CAV 2021 (artefact evaluation), TACAS 2021 (artefact evaluation), , FMCAD 2021, QEST 2021,SYNT 2019

Non-program committee reviews.
Acta Informatica, Transactions on Programming Languages and Systems, Robotics: Science and Systems 2017, CAV 2021, SOFSEM-FOCS2017, QEST 2017, QEST 2016, Information and Software Technology, 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

2018 **Computer Aided Verification Course**, *University of Oxford*, Guest Lecture.

2020 **Formal Methods: Specification, Verification, and Synthesis**, *UC Berkeley*, Guest Lectures.

2021 **Formal Verification**, *University of Edinburgh*, Course organiser.