

EDWARD KIM

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EDUCATION

The University of North Carolina at Chapel Hill

2019 -

Ph.D Candidate, Computer Science

The University of California at Berkeley

2013 - 2017

B.A in Computer Science

Honors B.A in Pure Mathematics

RESEARCH INTERESTS

Quantum Computation Theory: Quantum Complexity Theory
Quantum Information Theory
Topological Quantum Computation

RELEVANT COURSE WORK

Mathematics: Recursion Theory, Model Theory, Lie Groups, Smooth Manifolds,
Measure Theory, Functional Analysis, Topological Data Analysis,
Lie Algebras and their Representations, Homological Algebra,
Algebraic Topology, Mathematical Logic, Numerical Analysis,
Complex Analysis, Differential Geometry

Computer Science: Quantum Algorithms and Computation, Computational Complexity Theory,
Automata Theory and Computability, Algorithms in Computational Biology,
Structural Complexity Theory, Boolean Function Complexity,
Quantum Information Theory, Randomized Algorithms

RESEARCH

- **Edward Kim**, Parasara Sridhar Duggirala: Kaa: A Python Implementation of Reachable Set Computation Using Bernstein Polynomials, 7th Int. Workshop on Applied Verification for Continuous and Hybrid Systems, 2019

WORK EXPERIENCE

University of North Carolina at Chapel Hill

2019 -

Research Assistant- Providing research assistance to projects pertaining to the formal verification of safety properties of non-linear cyber-physical systems. Focusing on counter-example generation to aid practitioners in verifying the safety of their models. Supervised by Parasara Sridhar Duggirala.

- Created a tool called Kaa for the reachability of non-linear discrete dynamical systems using parallelotope bundles.
- Contributed to the documentation efforts of HyLAA, a verification tool of hybrid automata governed by linear dynamics.

University of South Carolina

2016

Research Assistant- Published some basic results about fundamental inequalities by remotely collaborating with Professor Wei-Kai Lai from the University of South Carolina, Salkehatchie.

Paper: Some inequalities involving geometric and harmonic means

TEACHING AND VOLUNTEER EXPERIENCE

Calculus Tutor

2018

Tutored Calculus to students at South Carolina State University. Stressed geometric intuition and visual approaches rather than rote memorization of formulae and concepts.

Programming Languages Tutor

2018

Provided discussions for South Carolina State University Computer Science students attending summer courses. Discussions pertained to Python, Java, and C.

EXPOSITIONS

Personal Lecture Notes

Created extensive lecture notes for personal edification. Covers a wide variety of topics from algebraic topology to recursion theory.

[Link to Notes](#)

Exposition on the Schur-Weyl Duality in Quantum Information

Wrote an expository paper on applications of the Schur-Weyl Duality to fundamental questions in Quantum Information Theory. Presented it to the Duke University PHYS 590 class of Spring 2020. [Link to Report](#)

WORKSHOPS/CONFERENCES ATTENDED

Simons Institute for the Theory of Computation

2020

Spring 2020 Workshop on Quantum Protocols: Testing & Quantum PCPs

[Link to Workshop Description](#)