

Kevin Lui Ph.D.

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📖: Seattle, WA

EDUCATION

- **University of Washington, Seattle** Seattle, WA
Ph.D. in Mathematics specializing in Computational Number Theory under William Stein - 3.75 GPA June 2019
- **University of California, Santa Barbara** Santa Barbara, CA
Bachelors in Mathematics - 3.8 GPA June 2014

PROGRAMMING SKILLS

- **Fluent in:** Python, Git, Sagemath, Latex, Linux as a desktop/development environment
- **Prior projects in:** SQL, Bash, Zsh, C++, MATLAB, Cython

EXPERIENCE

- **University of Washington** Seattle, WA
Researcher in Computational Number Theory Sep. 2014 — Jun. 2019
 - **Overview:** Thesis research centered around creating and implementing algorithms for computing invariants of modular abelian varieties. I was able to create algorithms for computing certain invariants where existing methods were computationally infeasible or non-existent.
 - **Technical skills used:** Code was written using the Sagemath Python library. Experiments were done using Jupyter notebooks. Tables of related invariants were computed and stored in PostgreSQL databases.
 - **Link to thesis:** <https://kevinlui.org/pages/thesis>
- **Sagemath Open Source Project** Online
Volunteer Developer Jun. 2016 — Present
 - **Overview:** Active contributor and user of Sagemath which is a Python mathematics package, similar to scipy, suitable for research-level number theory computations. See <https://www.sagemath.org/>
 - **Contribution stats:** Authored 25 tickets, 19 of which has been accepted. Reviewed 10 tickets. Thousands of Python lines added.
 - **Link to code contributions and code reviews:** <https://kevinlui.org/pages/code#sagemath>
 - **Sage days 87 - workshop/coding spring:** Finished old tickets to improve functionality of elliptic curves.
- **Google Summer of Code - Sagemath** Online
Student Developer Summer 2016
 - **Overview:** Implemented algorithms in Python supporting number theory research.
 - **Outcome:** This code has been merged into the master branch <https://trac.sagemath.org/ticket/21496> and is the foundation for my Ph.D. thesis work.
- **University of Washington Sage Seminar** Seattle, WA
Organizer Summer 2019
 - **Overview:** Mentored a group of math graduate students towards contributing to the Sagemath open source project. We had 8 meetings lasting 1-2 hours.
 - **Role:** Introduced members to the Sagemath codebase. Taught members the Sagemath development process which includes developing in a Linux environment.
 - **Outcome:** Six attendees have made their first open source code contribution!
- **UC Santa Barbara** Santa Barbara, CA
Undergraduate Summer Researcher Summer 2012
 - **Overview:** Derived a parametric model for determining a consensus given a group of experts' rankings on a set of alternatives.
 - **Role:** Wrote MATLAB code to solve the LP problem derived in the paper. Worked closely with faculty mentor to develop the model.
 - **Outcome:** Published: <https://www.sciencedirect.com/science/article/pii/S0165011413003308>

SELECT COURSEWORK

- **Instructor/TA/Grader:** Linear Algebra, Operation Research, Topology, Calculus, Real Analysis
- **Graduate:** Logic in CS, Game Theory, Real and Complex Analysis, Manifolds, Algebra
- **Undergraduate:** Data Structures and Algorithms, Cryptography, Computer Theorem Proving

SELECT PROJECTS

- **Links:** <https://kevinlui.org/pages/code/>
- **caleb:** Python package that helps with Latex citation by automatically retrieving bibliographic information from publicly available online sources. Used travis for CI, pytest for testing, and poetry for dependency management. See <https://github.com/kevinywlui/caleb>
- **Sagemath – isomorphism testing:** Implemented isomorphism testing of modular abelian varieties into the Sagemath Python library. Currently in the process of being merged. See <https://trac.sagemath.org/ticket/28275>