

Kevin Lui Ph.D.

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Citizenship: USA

EDUCATION

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

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. These are objects of great number theoretic importance. The overarching theme is bring these abstract objects into a linear algebraic setting that is more suitable for computations.
 - **Techniques skills used:** Code was written using the Sagemath Python library. Experiments were done using Jupyter notebooks. Tables of related invariants were computed in parallel and stored in PostgreSQL databases.
 - **Link to thesis:** <https://kevinlui.org/pages/thesis>
- **Sagemath Open Source Project** Online
Active Contributor and User Jun. 2016 — Present
 - **Overview:** Actively contribute to and use Sagemath which is a Python mathematics package, similar to scipy, suitable for research-level number theory computations.
 - **Link to contributions:** <https://kevinlui.org/pages/code#sagemath>
 - **Google Summer of Code 2016:** Improved functionality of modular abelian varieties in Sagemath. This work would eventually evolve into my Ph.D. thesis work. Development was done over Github: https://github.com/williamstein/sage_modabvar and has since been merged into the Sagemath master branch.
 - **Sage days 87:** Attended a workshop on p -adic number functionality in Sagemath. Worked on elliptic curve functionality.
- **University of Washington Sage Seminar** Seattle, WA
Organizer Jun. 2019 — Present
 - **Overview:** Mentoring a group of math graduate students towards contributing to the Sagemath open source project.
 - **Primary role:** Teaching the Sagemath development process which involves building Sagemath, collaborating via Sagemath's git-trac server, and following Sagemath developer conventions.
 - **Secondary role:** Bringer of coffee and Linux tech support.
 - **Success:** About 6 attendees have made their first open source code contribution.

PROGRAMMING COURSEWORK

All taken as an undergraduate at UC Santa Barbara. Primarily used C++.

- **Graduate:** Logic
- **Undergraduate:** Data Structures and Algorithms, Formal Languages and Automata, Cryptography, Random Number Generation, Computer Theorem Proving

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. Using this to learn CI, pytest, and making a package available on pypi.
- **Sagemath – isomorphism testing:** Implemented isomorphism testing of modular abelian varieties into the Sagemath Python library. Currently in the process of being merged: <https://trac.sagemath.org/ticket/28275>

PROGRAMMING SKILLS

- **Proficient:** Python, Sagemath, Latex, Git
- **Prior experience:** PostgreSQL, SQLite, Bash, GNU/Linux, C++, vim, MATLAB/Octave