Samuel S. Schiavone

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Profile

I am a researcher, programmer, and mathematician who combines mathematical abstraction with computational tools in order to discover, analyze, and elucidate. My expertise lies in translating theoretical concepts into practical solutions.

Skills

Programming Languages: Python, PostgreSQL, SageMath, Magma, R

Programming Tools: Git, Flask, Jinja, GNU Parallel, Scikit-learn, Pandas

Languages: English (native), French (fluent), Spanish (intermediate)

Selected Projects

Development for the L-functions and modular forms database (LMFDB) May 2018 – Present
Full Stack Web Developer *Remote*

- Collaborated on a joint open-source project to create an accessible repository of data in algebra and number theory, used by over 30,000 researchers and educators in math
- Co-created two sections of an online database: added data to the backend using Python and PostgreSQL; designed webpages to display the data using Flask, Jinja, and HTML
- Supervised four undergraduate students in the creation of a Magma and SageMath package to compute additional data
- Connected to other sections of the LMFDB by identifying and linking to related objects using scripts written in Python and SageMath

Computations in Inverse Galois Theory Jan 2022 – Nov 2024
Academic Researcher *Cambridge, Massachusetts*

- Collaborated on a team of 6 researchers to solve an open mathematical problem in computational number theory
- Combined theoretical expertise with practical programming skills in Python, PostgreSQL, SageMath, and Magma to produce a research article and two repositories of code, one a general Magma package and one tailored to a specific example
- Presented results in two invited talks to audiences of 30-50 researchers at VaNTAGe and Simons AGNTC annual meeting
- Synthesized detailed understanding of theoretical results in arithmetic geometry with technical programming expertise to give an explicit solution to an open mathematical problem

Experience

Research Scientist Sep 2019 – Aug 2025
Massachusetts Institute of Technology *Cambridge, Massachusetts*

- Conducted research in computational arithmetic geometry
- Devised and implemented algorithms to compute mathematical objects, wrote mathematical proofs, and chronicled my research in academic articles
- Aided in the development and maintenance of the L-functions and Modular Forms Database (https://www.lmfdb.org/), working both with data in PostgreSQL and Python on the backend and in Flask, Jinja, and HTML on the frontend
- Instructed undergraduate students in courses on linear algebra, algebraic geometry, mathematical communication, and Belyi maps

Education

Dartmouth College Hanover, New Hampshire
Ph.D. in Mathematics *Sep 2019*
The University of Vermont Burlington, Vermont
M.S. in Mathematics *Dec 2013*
Amherst College Amherst, Massachusetts
B.A. in Mathematics, magna cum laude *May 2010*