

# Matthew Yacavone

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## Professional Experience

### Software Engineer / Researcher

2020-2024 | Galois, Inc.

Designed, developed, and analyzed powerful tools for formal verification across many varied projects.

- Audited a large Python codebase implementing differential privacy for a government client, resulting in authoring a 21-page document detailing the mathematical probability of two key algorithms failing.
- Learned quickly to rapidly gain expertise in the field of differential privacy and techniques for probabilistic analysis.
- Designed software to simulate and clearly visualize the behavior of the key sampling routines of their codebase.
- Spearheaded the design, interface, and development of *Mr. Solver* – a tool within *SAW (Software Analysis Workbench)*, a large, decade-old suite of formal verification tools in active use as part of clients' critical systems, of which I was a core contributor.
- Co-authored two papers which use and rely on the progenitor of *Mr. Solver*, which I also developed, for their core results.
- Co-designed a domain-specific programming language for feature modeling, and designed its command-line user interface. Required quickly gaining expertise in the field of product-line engineering.
- Lead the company's "Blue Sky Time" program, hosting twice-yearly sharing sessions and acting as a friendly face encouraging use of the program through periodic announcement and one-on-one meetings.

### Research in Knot Theory

2019-2022 | Haverford College

Developed and proved a novel result in Legendrian Knot Theory in collaboration with my former professor Joshua Sabloff.

- Designed an interactive user interface in Python for exploring and collecting data on Legendrian knots, used to discover our result.
- Co-authored and designed figures for a paper published in a major knot theory journal.

## Education

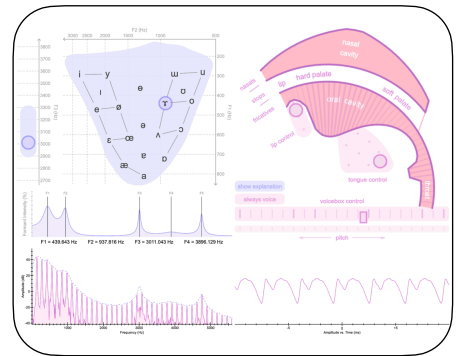
**B.S. Mathematics** from Haverford College, 2019

Included two semesters of graduate studies in mathematics at the University of Pennsylvania. Minor in Computer Science.

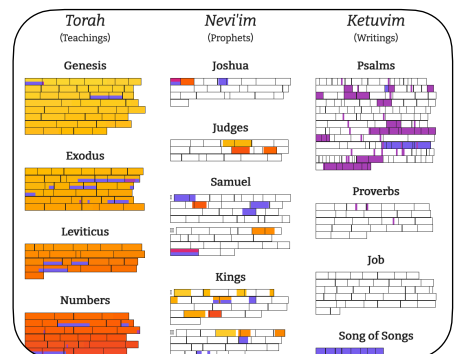
## Design Experience

### Interactive Web Design

Four years of experience creating interactive data visualizations for music theory, linguistics, and more – all available on my website.



Interactive Vowel Space



Visual Tanakh

### Lighting Design

Created visual landscapes of light and color for eight student-run musicals and plays over five years.

## Skills

**Web:** HTML, CSS, Javascript, Typescript, Node, Jekyll

**Design:** Photoshop, Illustrator, Affinity Suite, Blender

**Data:** Python, SciPy, Matplotlib

**Life:** Baritone ukulele, twisty puzzles