DAVID J. SHUSTER

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EDUCATION

Amherst College, Amherst, MA   June 2021

B.A. in Mathematics & Religion, graduated with Honors

- Unweighted GPA: 3.97
- Honors: Phi Beta Kappa
- Peer Tutor Fellow for Linear Algebra; Groups, Rings and Fields; Introduction to Analysis; and Mathematical Logic
- Activities: Board Games Club President; Philosophy Club Treasurer; Glee Club & A Cappella Member

RESEARCH EXPERIENCE

Rochester Institute of Technology, Rochester, NY   June 2019 – July 2019

Researcher (NSF REU)

- Discovered and proved a number of results in graph labeling (about rank numbers of Cartesian products $(K_m - e) \times P_n$).
- Delivered weekly presentations to research cohort and presented graph labeling results at the 2020 Joint Mathematics Meetings in Denver, CO.

AREAS OF INTEREST

My mathematical interests are quite broad, but here are some topics I particularly want to learn more about:

- Mathematical Logic/Foundations, Paradoxes, Computability Theory, Formal Language Theory, etc.
- Formal logic's connections with other fields of math, such as topological proofs of Gödel's Incompleteness Theorems; translations of proofs into graphs and zero-knowledge proofs; Boolean algebra; Automata Theory; etc.
- Other types of logic such as Many-valued Logic, Epistemological Logic, Quantum Logic, Modal Logic, Active Logic, Linear Logic
- Logic Programming, Assisted Theorem-Proving, Knowledge Representation and Reasoning, Formal Methods
- Game Theory, Voting Theory
- Category Theory and its connection to Set Theory, Type Theory, functional programming

- History, pedagogy (in general, as well as approaches in low-income and/or international situations), philosophy of math

TEACHING EXPERIENCE

Trinity Classical School, Bellingham, WA   Aug 2021 – Present

Upper School Math Teacher

- Creating lesson plans, designing curriculum, writing exams, and leading lessons for Pre-Algebra, Algebra I, Geometry, Algebra II (2021-2022), Pre-Calculus, and Calculus, the last three of which are new courses at the school.
- Wrote a collection of weekly adventure-themed riddles which drew on a range of mathematical topics, including graph theory, game theory, number theory, cryptography, analysis, and formal logic.
- Communicating with administrators, parents, tutors, and students to report on and support students' learning and holistic well-being.

MathPath (residential math camp), Skillman, NJ   June – July of 2021 & 2022

Counselor

- Assisted class instructors by facilitating class and office hours discussions for mathematically gifted students (ages 11-14); courses were week-long mini-courses on topics such as quantum logic, introductory knot theory, Mathematica, abstract algebra, the history of trigonometry.
- Organized mathematical scavenger hunts, games, and other activities for about 100 students, ages 11-14.
- Wrote letters and assisted others in writing letters about student performance, both academic and behavioral in the residential camp setting.

Freelance & other CA and PA

- Tutored, taught, and mentored students from first to twelfth grade in a variety of subjects, including English literature, mandarin Chinese, and math, etc.; programs included summer camps, non-profit low-income mentoring programs, and freelance private tutoring.
- Between high school and college, I took a gap year; for about four months, I interned at a non-profit organization that monitors and analyzes government spending. My role included editing drafts, gathering data, and conducting basic analyses which contributed to leading articles on major news websites such as the Wall Street Journal, Washington Post, and Forbes. I also apprenticed with a general contractor, interned with a leasing agent, and worked as a bakery clerk that year.

LANGUAGES

- Programming Languages: proficient with Java, Python, & LaTeX; had coursework projects in R & C++; familiar with basic HTML, JavaScript, & Wolfram Language; have fiddled around with ProLog
  - With two other students, created a musical keyboard program (Java) featuring instrument choice, as well as song loading and playback capability (Click here for more info.)
  - As part of a report on Israeli electoral systems for a Voting Theory class, created a tool (Python) that calculates Banzhaf Indices, a metric used to quantify power distribution in certain voting systems; the program also compares each party list's index to the fraction of the overall popular vote received by the respective party list (Click here for more info.)
- Spoken Languages: Mandarin Chinese (semi-native, rusty), German (intermediate)