THOMAS MURFF

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EDUCATION

Vassar College | Poughkeepsie, NY   2023 Graduate
Bachelor of Arts in Mathematics
- Relevant Coursework: Galois Theory, Topology, Mathematical Logic, Complex Analysis, Abstract Algebra, Real Analysis, Differential Equations, Number Theory, Probability, Multivariable Calculus, Linear Algebra.

PROFESSIONAL EXPERIENCE

Scale AI | *Math Expert* | Contract Work | Remote   October 2023 - Present
- Involves writing and editing prompts and guiding conversations with AI about advanced mathematics, to be used as sample data for training better generative AI models in mathematical domains.

Wolfram Summer School | *Attendee* | Research Program | Bentley University   June 2024 - July 2024
- Attended and graduated from the Wolfram Summer School 2024, specifically for the Wolfram Physics Project and Foundational Science program. This involved conducting mathematical physics research based on developing and implementing a hypergraph morphology. This involved creating an algebraic framework around hypergraphs, allowing for manipulation and analysis with Wolfram language, and providing key visualizations into the morphological transformations of hypergraphs.

Aon, PLC | *Summer Intern* | Insurance Company | Chicago, IL   June 2022 - August 2022
- Analyzed and cleaned an Excess Casualty account including data on loss description, premiums, and loss ratios.
- Used Excel and R as an Actuary for an underwriting division of over $5.2 billion gross written premium-generating company client.
- Prepared and presented a 10-slide PowerPoint deck to senior management on the analytic work conducted.

PROJECTS

Mathematics and Computer Science Research:
- Extensive experience in several areas of pure mathematics including universal algebra and lattice theory, Stone-type dualities, Galois connections, category theory, and group theory.
- Worked on open problems in pure mathematics for five years, primarily focusing on the finite lattice representation problem and Rota's basis conjecture, rediscovering several interesting and non-trivial results independently through self-guided study.
- Published a Wolfram Community post called "Morphology of Hypergraphs: A Study of Hyperedge Evolution", containing a finitary-algebraic algorithm to transform and morph hypergraphs, which was successfully implemented in the Wolfram language. This could have far-reaching applications from image processing to visualizing molecular structures.