Trowbridge Weed

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EDUCATION

Middlebury College Middlebury, VT
Candidate for Bachelor of Arts, Mathematics (Focus in Mathematical Sciences)
May 2022
GPA: 3.85/3.97
Activites: Data Science Tutoring, Computer Science Tutoring, Ski Patrol, Rugby.
Honors: Summa Cum Laude, College Scholar (Fall 2018, Fall 2019 - Spring 2022), Dean's List (Spring 2019).

INTERNSHIPS & EXPERIENCE

Socio-Technical Systems Research Assistant The Metagovernance Project
Online Governance Research Summer '22
- Exploring game-theoretic and network-scientific formalizations of collective decisionmaking models.
- Developing metrics metrics which quantify decentralization and power distribution within online organizations, especially DAOs.

Mathematics Research Assistant Middlebury College
Graph Theory Research - John Schmitt Summer '21
- Reviewed and refereed papers in the theory of minimum saturated graphs and hypergraphs.
- Adapted SAT solvers to find new placements to Martin Gardner's minimum no-3-in-a-line problem (github: https://github.com/tobyweed/no3/tree/master).

Computer Science Research Assistant Middlebury College
Robotics & Computer Vision Research - Daniel Scharstein Summer '19, Summer '20, Fall '20
- Implemented a robotic system to produce the next generation of the Middlebury Stereo Vision Datasets.
- Built up the system to achieve numerous production-quality, highly accurate ground truth depth maps.
- Wrote image processing, camera calibration, interprocess communication, and UI code in Swift, C++, C, and Python.
- Solved problems in a complex, interconnected software environment consisting of a UR5 robot arm, Ubuntu server, macOS server, and iOS device.
- Github: https://github.com/tobyweed/MobileLighting

Ski Patrol President Middlebury, VT
Middlebury Snow Bowl Ski Patrol January 2019-April 2022.
- Taught and lead a 40-person Outdoor Emergency Care class.
- Lead on- and off-mountain training, emergency response, team-building, and logistics for 35-member student patrol.

Software Engineering Intern Remote
FirstTube Media Summer '18.
- Designed and implemented a complete web app from the ground up.
- Programmed a standalone frontend using React and Redux and a backend API written with Python Flask and linked to a PostgreSQL database via a SQLAlchemy ORM layer.
- Application included customizable full-text search and a tiered permissions system.
- Deployed, linked, and maintained the two connected applications.

TECHNICAL SKILLS

Programming: Java, R, Swift, JavaScript, Python, C++, CSS/HTML, OpenCV, React.js, C, Flask, Node.js.
Miscellaneous Software: LaTeX, Xcode, RStudio, Linux CLI, Microsoft Office Suite (Word, Excel, PowerPoint, Outlook), Adobe Creative Cloud (Photoshop, Illustrator).

COURSEWORK

Mathematics

- MATH 0710: Advanced Probability Seminar
    - Undergraduate thesis: *The Application of Reproducing Kernel Hilbert Spaces to Regularization in Machine Learning*. Expository work on the functional analysis underlying kernel methods in machine learning. Full text available at my website (https://tobyweed.herokuapp.com/).
- MATH 0323: Real Analysis
- MATH 0302: Abstract Algebra
- MATH 0310: Probability
- MATH 0318: Mathematical Models
- MATH 0218: Statistical Learning
- MATH 0216: Introduction to Data Science
- MATH 0247: Graph Theory
- MATH 0223: Multivariable Calculus
- MATH 0200: Linear Algebra

Physics

- PHYS 0401: Quantum Mechanics
- PHYS 0380: General Relativity
- PHYS 0212: Applied Mathematics for the Physical Sciences
- PHYS 0202: Quantum Physics Applications
- PHYS 0201: Special Relativity and Quantum Physics
- PHYS 0110: Electricity and Magnetism
- PHYS 0109: Newtonian Physics

Computer Science

- CSCI 0202: Computer Architecture
- CSCI 0201: Data Structures

Honorable Mentions

- PHIL 0360: Consciousness
- PHIL 0280: Semantics, Logic, and Cognition
- ECON 0155: Introductory Microeconomics
- INTD 1089: Middlebury Entrepreneurs

MISCELLANEOUS PROJECTS

- Simulated cultural evolution with agent based models (https://tobyweed.shinyapps.io/tweed_langevo/)
- Adapted SAT solvers to find placements to Martin Gardner's minimum no-3-in-a-line problem (github: https://github.com/tobyweed/no3/tree/master).
- Contributed to the source code of an open-source Ethereum project (https://kleros.io/).
- Designed & implemented a Java applet to explore cellular automata (https://totalistic-cellular-automata.herokuapp.com/Automata.html).