ETHAN MADER

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EDUCATION

Purdue University   **Aug 2024 - Present**
Computer Science Ph.D. Program
- **GPA**: 3.93/4.0; member of Theory CS Seminar, TCS Reading Group, Chess Club
- Focus on theoretical computer science, advised by Kent Quanrud

University of California, Santa Barbara   **Sep 2020 - June 2024**
B.S. Computer Science, B.S. Mathematics
- **GPA**: 3.93/4.0; **SAT**: Math 800; **SAT Math II**: 800; Theta Tau Professional Engineering Fraternity

EXPERIENCE

Purdue Research Assistantship   **Sep 2024 - Present**
Graph Algorithms Researcher
- Explored algorithmic techniques for expander decompositions and their connection to the max flow problem
- Studied recent results in hypergraph unreliability and found evidence against its generalization to matroids
- Surveyed sub-quadratic, constant-factor approximations for the classic edit distance problem

Wyzant   **June 2023 – Sep 2024**
Math and Computer Science Tutor
- Remote instruction on competition math and C++ fundamentals, data structures, and algorithms
- 200+ hours and perfect 5-star rating across 30 reviews with one-time and long-term clients

UCSB Programming Languages Lab   **Jan – June 2023**
Undergraduate Researcher
- Developed metaprogramming techniques in Agda and Coq for automated proofs of equivalence between superconducting electronic (SCE) circuits, a useful tool for circuit designers
- Motivated the decision to translate Citrus, a newly developed package in Agda, to Coq

AWARDS

- **Purdue Presidential Excellence PhD Award** – $40,000 over 4 years given to top 1.4% of PhD students in 2024
- **Herbold Scholarship** – $10,000 awarded to 7 computer science PhD students at Purdue
- **UCSB Dean's Honors** – awarded for 11 of 12 academic quarters
- UCSB *magna cum laude* in College of Letters and Sciences, *cum laude* in College of Engineering
- 82nd Putnam exam – scored in the top half of 3000 undergrad students

PROJECTS

AI and ML Programming   **2022 - 2024**
- Implemented a Naïve Bayes classifier from scratch in C++ on 1000 testing files to predict future weather classifications given prior month's data at 1-day intervals with discrete and continuous variables
- Improved on A-star search to beat an arbitrary adversary in an arcade game with 93rd percentile in my class
- Trained a convolutional neural network in Python via TensorFlow on 40,000 training images to classify clothing images from 10 categories with 92% accuracy on 10,000 test images

Quant Skills: C++, Python (NumPy, Pandas, Scikit-Learn), Mathematica, Convex Optimization, Linear Algebra
Interests: Jane Street monthly puzzles, bullet chess (top 2% on chess.com), rock climbing, tennis, hiking