

Will Corcoran

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EDUCATION

University of California, Santa Barbara (UCSB)

Master of Science in Computer Science, GPA: 4.0

Bachelor of Science in Computer Science, GPA: 4.0

Santa Barbara, CA

Sep. 2024 - June 2026

Sep. 2022 - June 2025

RELEVANT EXPERIENCE

Undergraduate Research Assistant

Dynamo Lab: Dynamic Networks, UCSB

Targeted Edge Perturbations on GNNs

Sep. 2023 – Present

Santa Barbara, CA

Poster: [ERSP](#)

- Approximate the robustness of 5 graph neural network architectures to edge perturbations, contrast results to adversarial attack responses.
- Evaluate the effectiveness of 4 heuristic approaches to maximize edge additions while preserving model accuracy.
- Invented a two-part greedy-primed gradient attack by analyzing graph characteristics and extensive literature reviews.

Benchmarking and Improving Large Language Models on Graph Datasets

Paper: [NeurIPS \(in review\)](#)

- Collected 20 undirected graph problems with a varying degree of difficulty, structure, and intended algorithms.
- Generated the first extensive graph dataset of 2000 test cases for 12 different graph categories with NetworkX.
- Prompted 160 solutions across 8 LLMs, while measuring performance on test cases and categories.

Software Engineering Intern

Music Audience Exchange (MAX)

June 2024 – Sep. 2024

Dallas, TX

- Delivered algorithms to gather and format various metadata for 1000s of artist sites into well-structured JSON, improving data collection times by up to 1,500%.
- Developed and tested Cloudflare Workers for backend using Vitest and Node.js, enhancing scalability and performance.
- Engineered a high-performance, lightweight library for system-wide schema generation and type validation, converting TypeScript types to JSON schemas and verifying data types.

Undergraduate Learning Assistant

Data Structures and Algorithms, UCSB, Computer Science

Apr. 2024 – June 2024

Santa Barbara, CA

- Conducted office hours for over 100 students, provided support regarding homework, exams, and programming problems.
- Graded 800 assignments and administered 2 exams, ensured students understand complex, challenging concepts.
- Corresponded with the teaching team to ensure optimal student learning and manage course pace.

Fullstack Software Engineering Intern

Haggard Labs

June 2023 – Sep. 2023

Fort Worth, TX

- Assisted the launch of a financial wealth aggregation application, focused on user experience and efficient response times.
- Optimized data writing and retrieval by up to 80% through NoSQL database management.
- Engineered secure serverless functions to retrieve financial data from external entities via RESTful APIs, leveraging Express.js, Node.js, and Firebase Cloud Functions.

PROJECTS

Talking Theory | Python, Numpy, NetworkX

June 2024 – Present

- Record short instructional lectures from seminal, popular, or provoking literature pertaining to theoretical computer science with a focus on combinatorial or randomized algorithms.

NcaamGNN | Python, Pandas, Selenium, Numpy, PyTorch Geometric

Dec. 2023 – Present

- Implement weighted link prediction graph neural network architecture to forecast outcomes of college basketball games.
- Collect, clean, and manage more than 100,000 pieces of data with 100s of features using Selenium and Pandas, while utilizing PyTorch Geometric to model and organize data as graph dataset.

FillerAI | TypeScript, Next.js, GitHub Actions

Sep. 2023 – Dec. 2023

- Produced an AI player for a strategy game using Minimax with Alpha-Beta pruning algorithms to make quality moves.
- Formulated specific mathematically rigorous evaluation function to quantify board states for AI player.
- Employed Next.js to develop a seamless and interactive environment, ensuring less than 1 second response from AI player.

Verde | TypeScript, Firebase, React Native, Expo

Dec. 2022 – Mar. 2023

- Crafted a social media app, Verde, with daily environmentally-focused challenges along with photos and user interaction.
- Contributed with a team of 3 others in an Agile development process using React Native, Expo, and Firebase.
- Awarded 1st place in UCSB's Google Developers' 2023 Solution Challenge.

Startup Company Success Predictor | Python, NumPy, Scikit-learn

Sep. 2022 – Dec. 2022

- Built a predictive model for startup companies based on a holistic view of their founding, funding, and fundamentals.
- Produced a Random Forest Classification model using Scikit-learn, NumPy, and Pandas.
- Increased accuracy by 22% over ground truth predictions with careful consideration of parameters.

LEADERSHIP EXPERIENCE

- Leadership Committee, CRU, Real Life** Sep. 2023 – Present
- Coordinate and plan weekly events, meetings, and dinners; ensure all resources are supplied.
- Independent Label Music Executive, 9929 Records** Aug. 2021 – Present
- Establish three artists from the ground up using image and likeness, sound, and social media.
 - Create, produce, and publish five albums and more than 150 songs with over 600,000 streams.
 - Assess trends and data to create a marketing plan for each release and performance.

VOLUNTEERING EXPERIENCE

- Middle School Math Volunteer** Sep. 2022 – Present
- Led a group of five or more students down paths to accomplish classwork and review homework.

HONORS

- Early Research Scholar* Sep. 2023 – June 2024
- Regents Scholar* Sep. 2022 – Present
- College of Engineering Honors* Sep. 2022 – Present
- Dean's Honors* Sep. 2022 – Present

RELEVANT COURSEWORK

Data Structures and Algorithms, Algorithms Engineering, Finite Automata, Linear Algebra, Computational Science, Computer Architecture, Compilers, Machine Learning, Artificial Intelligence, Deep Learning, Quantum Computing, Fine-Grained Complexity, Probability and Statistics, Multivariable Calculus, Differential Equations

TECHNICAL SKILLS

Languages: Python, C++, JavaScript, TypeScript, Java, Rust, SQL, HTML/CSS
Frameworks: React Native, Node.js, React.js, Next.js, Django, Flask, Expo
Developer Tools: Google Cloud Platform (GCP), Cloudflare, Vitest, Bash/Scripting, Git/GitHub, Docker, Postgres, NoSQL DBs
Libraries: Scikit-learn, PyTorch, PyTorch Geometric, NetworkX, Pandas, NumPy, Matplotlib

PAPERS

- [1] Qiming Wu, Zichen Chen, Will Corcoran, Misha Sra, and Ambuj K. Singh. Grapheval2000: Benchmarking and improving large language models on graph datasets, 2024.