

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.
- Contributed to complex GCP workflows, and maintained parallelized systems with over 30 steps.

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 & VOLUNTEERING EXPERIENCE

Leadership Committee, CRU, Real Life <ul style="list-style-type: none">Coordinate and plan weekly events, meetings, and dinners; ensure all resources are supplied.	Sep. 2023 – Present
Middle School Math Volunteer <ul style="list-style-type: none">Led a group of five or more students down paths to accomplish classwork and review homework.	June 2023 – Present
Independent Label Music Executive, 9929 Records <ul style="list-style-type: none">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.	Aug. 2021 – Present

HONORS

<i>Early Research Scholar</i>	Sep. 2023 – June 2024
<i>Regents Scholar</i>	Sep. 2022 – Present
<i>College of Engineering Honors</i>	Sep. 2022 – Present
<i>Dean's Honors</i>	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
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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.
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