Will Corcoran

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Education

University of California, Santa Barbara (UCSB) — Santa Barbara, CA
Master of Science in Computer Science, GPA: 4.0 — *Sep. 2024 - June 2026*
Bachelor of Science in Computer Science, GPA: 4.0 — *Sep. 2022 - June 2025*

Relevant Experience

Undergraduate Research Assistant — Sep. 2023 – Present
Dynamo Lab: Dynamic Networks, UCSB — *Santa Barbara, CA*

Targeted Edge Perturbations on GNNs — *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 — June 2024 – Sep. 2024
Music Audience Exchange (MAX) — *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 — Apr. 2024 – June 2024
Data Structures and Algorithms, UCSB, Computer Science — *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 — June 2023 – Sep. 2023
Haggard Labs — *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

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 Sep. 2023 – Present
- Coordinate and plan weekly events, meetings, and dinners; ensure all resources are supplied.

Middle School Math Volunteer June 2023 – Present
- Led a group of five or more students down paths to accomplish classwork and review homework.

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.

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.