Collin Jung

collinj2@stanford.edu — 217-778-7328 — collinjung.space

Education

Stanford University

M.S. in Computer Science (Human Computer Interaction) **2023 - 2025**

B.S. in Computer Science (Artificial Intelligence) **2021 - 2025**

Coursework:

Artificial Intelligence, Natural Language Processing, Cross-Platform Mobile App Development, Web Programming, Data structures & Algorithms, Computer Systems, Probability Theory, Computational Logic, Cryptography, Cybersecurity, Linear Algebra & Multivariable Calculus

Professional Experience

Amazon | Javascript, Typescript, React, REST API **Seattle, WA**

Software Developer Engineer Intern **Summer 2024**

- Worked in a core AWS Cloud team dealing with Tier 0 services essential to running the EC2 compute platform and Amazon VPC.
- Solved challenging problems associated with resolving networking configurations of Elastic Cloud Compute (EC2) instances.
- Finished the base project deliverable (Authenticated API Endpoint) and 3 additional stretch goals during internship duration.
- Produced a production-ready authenticated full-stack application exposing an automated service tool for VPC service teams.
- Reduced service time from 10+ minutes to < 1 minute for operators verifying network configurations and performing manual log analysis.
- Project impacts users across all (25+) commercial regions allowing for dedicated analysis of AWS session life-cycles and log tracing.

Stanford AI Lab **Stanford, CA**

University Research **2023 - 2024**

- Designed a novel method for optimizing and combining expert models utilizing DSPy modules and a custom routing function.
- Used density-based clustering techniques on embeddings to improve upon baseline model results on datasets with multiple topic splits.
- Algorithm automatically clusters new inputs into existing groups, triggering the router to choose the best available expert model.

Wolfram Research **Champaign, IL**

Software Developer Intern **Summer 2021, 2023**

- Contributed to the Wolfram Neural Net Repository by providing models and resources to the Wolfram community.
- Extended functionality of the Wolfram Language by implementing new user functions and revising existing functions.
- Analyzed and created individualized visualizations for existing graph data in the Wolfram Data Repository.
- Established compatibility in the Mathematica interface between the Wolfram Language and the Unity game engine.

Game Physics Simulation Intern **Summer 2022**

- Prototyped physics simulations of a variety of custom rigid-bodies and joints using external game physics engines.
- Designed user interfaces using UI/UX principles for a physics AR/VR applications project using Unity and C#.

Notable Projects

BERT Multitask Model | Python, PyTorch **Spring 2024**

- Developed a BERT multitask model from scratch with sentiment analysis, semantic text similarity, and paraphrase detection capabilities.
- Placed top 75 in model test leaderboards in a class of 500+ Stanford undergraduate and graduate students with custom model.

Bubble | Javascript, React Native, Expo, PostgreSQL, Supabase, REST API **Spring 2024**

- Created a functioning full-stack social computing app designed to connect university students with upcoming events.
- Implemented a full onboarding process with authentication, back-end database, several custom screens, and REST API endpoints.

Hack with Google | Google AppSheet, AppScript, GPT-3.5-Turbo, Optical Character Recognition **Summer 2023**

- Awarded second place prize by Google. Judged on innovation, technical execution, accessibility/impact, and business potential.
- Spearheaded the development of a web app with several AI features to boost the efficiency of manufacturing companies.
- Implemented automatic document processing from images, text translation, document simplification, and query-based clarification.

Automated Code Review Model | Python, GPT-3.5-Turbo **Spring 2023**

- Created an automated code review model that generates comments and performs targeted code revision given a code snippet.
- Utilized the novel DSPy framework with custom prompt templates to achieve results comparable to baseline GPT model.

Movie Recommending Chatbot | Python **Winter 2023**

- Constructed a chatbot that stores users' movie ratings and uses item-item collaborative filtering to recommend similar movies.
- Implemented all main functionality including CLI parsing, filtering algorithms, dataset analysis, and prediction algorithms.

Encrypted Chat Client | Javascript **Winter 2023**

- Built a working secure and efficient end-to-end encrypted chat client that ensures forward secrecy and break-in recovery.
- Designed and implemented the Double Ratchet algorithm, a popular session setup protocol that powers Signal and WhatsApp.

Operating Systems Shell | C++, Valgrind **Spring 2022**

- Developed a fully-functional sophisticated shell that utilizes multiprocessing using fork, execvp, and waitpid system calls.
- Functionality supports pipelines, I/O redirection, and allows handling of multiple executable commands.

Languages: Python, JavaScript, TypeScript, Wolfram Language, C/C++, C#, SQL

Skills: AWS, Agile (CI/CD), Cloud technologies, Cross-Platform App Development (React Native, HTML/CSS, Expo, Express.js, Node.js, REST API, MongoDB, Firebase, Flask), Jupyter Notebook, Google Suite, x86, LaTeX, Git