

Tai Phan

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EDUCATION

Virginia Polytechnic Institute and State University

Blacksburg, VA

Master of Engineering in Computer Science

Aug 2024 – Expected May 2026

Bachelor of Science in Computer Science

Aug 2022 – May 2025

- **GPA:** 3.98

EXPERIENCE

Undergraduate Research Assistant

Sep 2023 – Dec 2023

HEAP Lab - Virginia Tech

Blacksburg, VA

- Worked in a collaborative setting with undergraduate and graduate researchers to develop and optimize memory compression algorithms
- Employed empirical analysis of several compression algorithms written by other researchers
- Performed A/B testing on different implementations of the same algorithm to identify the strengths and weaknesses of each approach

PROJECTS

Short Answer Grading Web Application | *FastAPI, Ollama, React, Postgres, Docker*

Jan 2025 – May 2025

- Organized and led a team of 5 students to develop a web application for grading short answer questions using a custom-trained LLM model
- Met directly with the client to gather requirements and design the application architecture
- Operated on a two week sprint cycle, utilizing Agile methodologies to manage project progress and deliverables to deliver a functional product to the client
- Implemented a RESTful API using FastAPI to handle user requests and responses, including grading and feedback generation, storing user data in a Postgres database, and managing user authentication
- Tested several LLMs with different prompt templates to reach a RMSE of [0.93]

Bucketlist Android Application | *Kotlin, SQLite, XML*

Sep 2024 – Oct 2024

- Created an Android bucket list application that supports adding, removing, and editing goals items
- Utilized the Room framework to create a repository system for accessing a local SQLite database through Kotlin Coroutines
- Designed a reactive, user-friendly interface for viewing and editing goal items with Kotlin StateFlow's
- Maintained Android best-practices such as enforcing separation of concerns through MVC

Flashcard Desktop Application | *CSS, Java, JavaFX, SQLite*

Jun 2024 – Aug 2024

- Designed a desktop flashcard app that supports creation of flashcards with both text and images, sorted ordering of flashcards, editing existing flashcard sets, and ability to favorite flashcards for further review
- Implemented a SQLite database to store flashcards and sets between user sessions
- Developed an interactive user interface featuring a modal dialog, which offers the user a range of options for image uploads

Huffman Multi-Byte Compression | *C*

Sep 2023 – Dec 2023

- Developed a memory compression algorithm consisting of Huffman coding trees using C, which is able to reach a compression ratio of [1.91]
- Designed an algorithm which writes individual bit sequences to memory to aid in memory data encoding
- Optimized algorithm compression ratio through truncation of the Huffman coding tree using an escape character for longer encoded character sequences
- Explored ways to optimize compression ratio using multi-byte sequences in Huffman coding trees

TECHNICAL SKILLS

Languages: Java, Python, C, Bash, LaTeX, HTML, CSS, Javascript, SQL

Frameworks: Electron, Vue.js, Node.js, JUnit, SQLite, JavaFX, FastAPI

Developer Tools: Git, Docker, VS Code, Visual Studio, PyCharm, IntelliJ, Eclipse, Copilot

Libraries: pandas, NumPy, Matplotlib