Quang Hoang

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US Citizen | Eagle Scout | Community Service Awards

Education

William & Mary — Williamsburg, VA
Bachelor of Science in Computer Science — *Aug 2022 – Dec 2025*

- **Focus**: GenAI for Software Development, Applied Cybersecurity, Data Science, Cybersecurity Mgmt, Finite Automata, Algorithms

Projects

Prompt Engineering for In-Context Learning | *Python, OpenAI API, Pandas* — Apr 2025 – May 2025

- Designed and evaluated **5 prompting strategies** (including Chain-of-Thought and Self-Consistency) across 22 software engineering tasks using **GPT-4** and **Codestral** models.
- Built an automated benchmarking pipeline with **Pandas** to analyze model performance using **BLEU**, **ROUGE**, and **CodeBLEU** metrics.
- Conducted comparative analysis proving that **Chain-of-Thought** prompting significantly improved complex reasoning capabilities over Zero-Shot baselines.

Fine-Tuning for Automated Code Completion | *PyTorch, Hugging Face, Pandas, Scikit-learn* — Mar 2025 – Apr 2025

- Fine-tuned the **CodeT5-Small** Transformer model using the **Hugging Face Trainer API** to automate the repair of missing conditional logic in Python.
- Optimized training pipelines with **PyTorch**, utilizing **EarlyStopping** callbacks to prevent overfitting on a dataset of 50k+ methods.
- Evaluated model performance using **CodeBLEU** and **F1 scores**, achieving a **0.88** metric that indicated high semantic accuracy.

N-gram Probabilistic Language Model | *Python, Pygments, Pickle* — Feb 2025 – Mar 2025

- Engineered a statistical **N-gram language model** from scratch to predict Java code tokens, achieving a validation **perplexity of 26** (n=3).
- Implemented custom tokenization using **Pygments** to parse Java syntax into discrete tokens for probability analysis.
- Designed a persistent storage mechanism using **Pickle** to save trained model states, optimizing reload times for inference tasks.

Technical Experience

Cybersecurity Researcher (COVA CCI) — Sep 2025 – Nov 2025
Coastal Virginia Center for Cyber Innovation — *Coastal VA*

- Conducted vulnerability analysis on game engines, utilizing **Cheat Engine** to reverse-engineer memory structures.
- Demonstrated proof-of-concept exploits (Memory Editing, DLL Injection) to bypass anti-cheat mechanisms in *AssaultCube*.
- Authored a technical research paper detailing game exploitation vectors and mitigation strategies.

Software Developer Intern — May 2025 – Aug 2025
Soft Tech Consulting — *Fairfax, VA*

- Built and deployed a customized **LLM chatbot** using Microsoft Copilot Studio to automate internal knowledge retrieval.
- Designed and implemented a relational database schema in **Microsoft Dataverse** to support business process automation.
- Developed a Power Apps interface using **Power Fx** logic for efficient data entry and management.

Cybersecurity Competitive Hacker | *National Cyber League* — Jan 2025 – May 2025

- Achieved a **top 3.2%** ranking (Team) and **top 20.6%** (Individual) in the Spring 2025 season.
- Solved complex CTF challenges across 9 domains, specializing in **OSINT**, **Log Analysis**, and **Cryptography**.

Technical Skills

Languages: Python, Java, C, JavaScript, TypeScript, HTML/CSS
Frameworks: React, Express, Flask, Vite, Node.js
Developer Tools: Git, GitHub, VS Code, JetBrains IDEs, Cheat Engine, Postman
Platforms: Linux, Windows, Mac OS X, Microsoft Power Platform