Hoang Nguyen

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Education

University of Washington Expected Dec 2025

Bachelor's in Computer Science

Skills

Languages: Python, C++, C, Golang, SQL, Java, TypeScript

Frameworks and Libraries: PyTorch, Numpy, Matplotlib, Sklearn, FastAPI, Flask, Django, CMake, vcpkg, CUDA, OpenGL, GLSL, POSIX, Gin, Postgres, Redis, MySQL, Docker, Nextjs, React, Node.js, Express.js, GraphQL, AWS, Google Cloud Platform, Spark, gRPC

Experience

Software Engineer Intern Jun 2024 – Sep 2024

Visual Concepts *Seattle, WA*

- Developed CUDA kernels for BVH construction by employing warp-level parallelization, which boosted build times.
- Engineered a mesh compression system by implementing custom vector quantization, which decreased 3D model memory usage by 50%.
- Built an OpenGL + CUDA profiling tool for character rendering pipelines, which improved rendering performance analysis in NBA2K.

Research Assistant Dec 2024 – May 2025

Efeslab University of Washington *Seattle, WA*

- Developed GPU anomaly detection pipelines using CUDA, optimizing for 9.5% higher F1 scores, showcasing parallel processing proficiency.
- Implemented custom DAG schedulers for efficient workload execution on consumer GPUs, enhancing resource utilization and performance.
- Utilized Python and vLLM to process 1M+ logs for cloud reliability, demonstrating AI and LLM expertise in a research context.

Software Engineer Intern Oct 2023 – Dec 2023

Yoomi Health *Remote, WA*

- Engineered a real-time body-pose tracking pipeline using TensorFlow.js and YOLOv5, which boosted client-side render FPS from 20 to 60, demonstrating performance optimization skills.
- Developed a custom TypeScript visualization library with 20+ charts, coupled with 95% unit test coverage using Jest, showing proficiency in front-end development and testing methodologies.
- Built a coordinate transformation service using a custom tree structure to preprocess pose data, which reduced load time by 50%, showcasing expertise in data processing and algorithm design.

Projects

Lung Cancer Detection | *Pytorch, Python, OpenCV*

- Developed four U-Net CNN architectures for 3D MRI image segmentation using PyTorch, which achieved 78% accuracy on validation.
- Preprocessed and augmented a dataset of 63 MRI scans using OpenCV to improve generalization, which enhanced model robustness for lung cancer detection.
- Iterated on model design and training strategies within a team, which improved outcomes and demonstrated collaborative problem-solving skills for the federal ecosystem.

Bored Game Engine | *C++, CMake, OpenGL, GLSL, ImGui, LLVM, Computer Graphics*

- Engineered real-time 3D rendering pipeline using OpenGL and GLSL, which improved visual fidelity and demonstrated proficiency in graphics programming.
- Designed modular game engine with ECS architecture in C++, which improved code maintainability and enabled future GPU acceleration.

Rick Sanchez Chatbot | *Pytorch, Numpy, Docker, Redis, Postgres, HuggingFace, Puppeteer*

- Fine-tuned DialoGPT for conversational AI by implementing HuggingFace Transformers, which improved model perplexity by 12%, demonstrating NLP expertise.
- Deployed a Discord chatbot with Docker, Redis, and Postgres, by containerizing and integrating the model, supporting state tracking and showcasing full-stack capabilities.