

Hoang Nguyen

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SUMMARY

C++ Software Engineer specializing in AI systems, autonomous agents, and real-time simulation. Seeking roles in robotics, defense, and game AI where applied AI and systems engineering intersect.

EDUCATION

B.S., Software Engineering
San Jose State University

Aug 2022 – May 2026
GPA: 3.82

TECHNICAL SKILLS

Languages: C++ (primary), Bash, Python, Java, C#

AI & ML Systems: Behavior Trees, Utility AI, Blackboards, Perception, Pathfinding, State Machines, Neural Networks, Machine Learning

C++ Systems: ROS2 (rclcpp), Linux/Windows, CMake, GCC/g++/MSVC, Git, Multi-threading (std::thread, OpenMP), Google Test/Catch2, Visual Studio/CLion, Unreal Engine 5 (C++ & Blueprints), SFML, SDL, openFrameworks

Certifications: CompTIA Security+ (SY0-701) - In Progress

PROJECTS

Pathfinding Algorithm Visualizer | C++, SFML, std::thread, OpenMP, ImGui

- Accelerated performance by **8.5x** using OpenMP and std::thread to optimize sequential vs. multi-threaded execution for real-time autonomous system constraints.
- Benchmarked and evaluated **6 search algorithms** by designing and implementing a real-time autonomous navigation research tool.

Autonomous Steering Behaviors | C++, SFML, Unreal Engine 5

- Demonstrated portable behavior architecture across **SFML** and **Unreal Engine 5**, making it directly applicable to real-time autonomous vehicle control loops.
- Optimized real-time autonomous agent movement by engineering custom, composable runtime forces for **seek, flee, arrival, wander, obstacle avoidance, and wall avoidance** behaviors.

Tactical Combatant AI System | Unreal Engine 5, C++, Utility AI, Behavior Tree

- Engineered a **hybrid Utility AI + Behavior Tree** architecture.
- Maximized agent responsiveness in dynamic environments by using the Utility AI framework to continuously evaluate live states and execute contextual choices like taking cover or engaging.

Modular NPC AI Framework | Unreal Engine 5, C++, OOP, Blueprints

- Decoupled agent logic by architecting an object-oriented C++ framework that cleanly manages diverse NPC profiles such as ranged, melee, and complex boss behaviors.
- Driven dynamic spatial awareness through the integration of **Behavior Trees, EQS, and AI Perception**, enabling NPCs to continuously recalculate and optimize positioning.

3D Physics & Collision Game Engine | C++, openFrameworks

- Optimized collision query performance and runtime efficiency by engineering **AABB** algorithms backed by an **octree spatial partitioning** structure.
- Ensured precise agent movement and trajectory handling by building a custom physics engine using **Euler integration** for gravity and external force accumulation.

EXPERIENCE

De Anza College, C++ Teaching Assistant

Jul 2025 – Mar 2026

- Delivered technical instruction on modern C++ including OOP, memory management, and debugging to 30+ students through weekly office hours and 1:1 guidance.

SJSU Game Dev Club, Officer

Aug 2022 – Sep 2025

- Led Unreal Engine workshops for **40+ members** and organized charity live-stream raising **\$3,500** for UCSF Benioff Children's Hospital.