

NITHILAN KUMARAN

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Education

University of Wisconsin-Madison

Aug. 2024 – May 2028

Bachelor of Science in Computer Engineering & Minor in Game Design

Madison, Wisconsin

- **Relevant Coursework:** Data Structures (Java), Object-Oriented Programming (Java), Algorithms, Machine Organization (C), Computer Graphics, Game Design I

Experience

Neureal

May 2026 – Present

Gameplay Engineering Intern

San Mateo, California

- Profiled and optimized runtime performance on a live multiplayer Roblox title, reducing latency by 5% across gameplay systems.
- Developed state-driven enemy AI in Luau on a shared combat framework, implementing windup, fire, and recovery attack phases synchronized across multiplayer clients.
- Built the Go daemon behind NeuBridge, an internal MCP developer tool bridging Roblox Studio to VSCode, implementing live console log streaming and DataModel snapshot services that power editor autocomplete and path diagnostics.

Software Engineering Intern

Summers 2023 & 2024

- Designed and shipped core in-game shop and transaction systems in Lua for a live Roblox title with **164M+ lifetime visits**, implementing search algorithms and end-to-end purchase flow.
- Ported a React-based UI architecture to Roblox Lua, translating component-based design patterns, state management, and event-driven logic into a game engine compatible implementation.
- Implemented dynamic and lazy loading for component-based Roblox UI, cutting load work for off-screen content to enable smooth scrolling and responsive content delivery in large catalogs.

Sentari AI

Sep 2025 – Dec 2025

Software Engineer Intern

New York City, NY

- Architected a multi-stage content automation pipeline integrating n8n, large language model APIs, and WordPress, deploying to production through Vercel and reducing manual publishing overhead to near zero.
- Hardened pipeline reliability with scheduling, retry logic, structured error handling, and data transformation guarantees, improving deployment consistency and reducing operator intervention.

Carrier Global Corporation

May 2025 – Aug 2025

Software Systems Intern

Atlanta, Georgia

- Integrated Amazon Bedrock and Amazon Q into Carrier's SAP environment on a cross-functional team, automating payment and billing workflows across distributed enterprise systems.
- Developed an AI-driven financial prediction service backed by SQL databases and vector stores, writing queries and data models to surface insights for senior engineering stakeholders.
- Led SAP UAT for Spot Buy Purchase Orders and Purchase Requisitions, validating end-to-end workflows across distributed systems and reducing production defects by 15%.

Projects

Meridian | *In-Memory Cache Server, C++20, CMake*

Jan 2026 – Jul 2026

- Built a Redis-style cache server from scratch in C++20 with an O(1) LRU cache, kqueue event loop, and consistent hash sharding.
- Scaled in-process cache throughput 12x (838K to 10.3M ops/sec) with lock-stripped concurrency, verified race-free via ThreadSanitizer.
- Sustained 165K req/sec end-to-end at p99 under 1 ms across 100 concurrent TCP connections.
- Trained a logistic-regression eviction policy (sklearn) with hand-written C++ inference, beating LRU hit rate 1.4x.

2D Game Engine | *C++, CMake, SDL2*

May 2025 – Jan 2026

- Developed a cross-platform 2D game engine in C++ using SDL2, implementing a modular, component-based architecture with system-level separation for rendering, input handling, and game logic.
- Implemented real-time rendering, transform, and physics systems to manage object movement and gameplay interactions, validated end-to-end through a Pong proof-of-concept.

Technical Writing | *Medium, Stackademic*

Nov 2024 – Present

- Authored engineering articles on game development, systems programming, and AI, garnering 10,000+ total reads and averaging 800 monthly views.

Technical Skills

Languages: C++ (C++20), Go, Python, Java, JavaScript, TypeScript, Lua/Luau, SQL, Bash

Systems & Cloud: Concurrency, Multithreading, Caching, Performance Profiling, MCP, REST APIs, PostgreSQL, NoSQL, Docker, Git, CI/CD, AWS (Bedrock, Amazon Q)

Frameworks & Engines: React, Next.js, Node.js, SDL2, CMake, Unreal Engine, UEFN, Unity, Roblox Studio

Certifications: AWS Certified Cloud Practitioner, AWS Certified AI Practitioner