Vince Aivan P. Rumalay

Aspiring Software and Machine Learning Engineer

Personal Info

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Arxivory

Vince Aivan Rumalay

Education

BS in Computer Science
Undergraduate
Centro Escolar University
2023 - Present

Skills

- AI and Machine Learning (Python, Scikit-Learn, Pytorch, NumPy, Pandas, Matplotlib)
- Front End Development (ReactJS)
- Back End Development (Node.js, NestJS)
- Database Development (MySQL, PostgreSQL, Prisma, Supabase)
- GPU Programming (CUDA, C++)
- Computer Graphics Engineering for Scientific Computing (C++, OpenGL, Three.js, WebGL, WebGPU)

About Me

Computer Science student specializing in Software Engineering, AI/ML and GPU-accelerated computing. Experienced in developing physics-informed and financial AI models, 3D rendering engines, and data-driven marketplaces.

Experience

May 2025 - present
Centro Escolar University
Associate Developer

- Helped managed the architecture of a high-fidelity 3D CAD-based networking simulator using Three.js and WebGL, implementing spatial algorithms for node-to-node connectivity and real-time visualization of network data flow.
- Led on designing a relational database for a programming course management system, utilizing MySQL and Java Persistence API (JPA) integrated on Spring Boot to optimize complex many-to-many relationships and SQL query performance for high-concurrency enrollment workflows.

August 2023 - present
Independent Developer and Researcher

- Developed a quantized Physics Informed Neural Network (PINN) model for WBGT prediction, optimized for mobile deployment and urban heat safety.
- Built a GPU-accelerated thermal/fluid dynamics sandbox with Three.js and WebGPU for rapid engineering simulation prototyping.
- Engineered CUDA–OpenGL 3D visualization tools for medical imaging (DICOM raymarching) with AI-based denoising using PyTorch and Scikit-Learn.
- Designed a scalable scientific asset marketplace with ReactJS, NestJS and TurboRepo, integrating ML-driven metadata extraction and Supabase-managed data pipelines.

Technical Projects

March 2026 - present

TagInit: Physics-Informed Neural Network (PINN) for urban heat safety

- Developed a PINN model for Wet Bulb Globe Temperature (WBGT) prediction, incorporating physical constraints into the loss function to ensure geographical consistency.
- Successfully quantized the model for mobile deployment, balancing inference speed with prediction accuracy.

February 2026 - present

RadOptima AI: 3D Medical Imaging

- Engineered a desktop-based volume raymarching engine using OpenGL to render 3D reconstructions from DICOM medical imaging data.
- Utilized Pytorch for the AI image denoising engine.
- Implemented interoperability with CUDA, C++, and Python.

November 2025 - present

ThermoLab: Thermal and Fluid Dynamics Analyzer and Sandbox

- Engineered a web-based, GPU-accelerated simulator for thermal and fluid dynamics using WebGPU compute shaders, achieving real-time parallel processing of complex heat transfer equations.
- Architected an AI/ML optimization framework within the simulation pipeline, utilizing neural surrogate models to accelerate numerical convergence and reduce computational overhead for high-fidelity fluid simulations.
- Developed a high-performance 3D visualization engine using Three.js to render volumetric heat maps and vector fields, enabling interactive analysis of multi-physics data directly in the browser.

Honors and Awards

July 2025 - September 2025

Finalist | BPI DATA Wave Hackathon

- Developed an AI-driven financial platform for MSME segmentation and bank-loop feedback. Role: Associate Developer

July 2025

Felta Multi-media Award | Create and Conquer FEU Hackathon

- Recognized for a gamified productivity application built for the educational sector. Role: Associate Developer.

May 2025 - June 2025

Finalist | Sparksfest GDG PUP Hackathon

- Developed an AI-based city community management software for SDG 11: Sustainable Cities and Communities. Role: Associate Developer.

Certificates

March 2026 / DataCamp
Intermediate Deep Learning with PyTorch

February 2026 / DataCamp
Unsupervised Learning in Python

January 2026 / DataCamp
Supervised Learning with scikit-learn

October 2025 / BPI
BPI DATA Wave 2025 Certificate of Participation

August 2025 / Devcon Laguna
AI Unlocked: Introduction to Artificial Intelligence and Machine Learning

July 2025 / Computer Engineering Organization FEU
Create and Conquer Hackathon 2025 Certificate of Appreciation

June 2025 / Google Developers Club
Sparkfest: GDG PUP Hackathon 2025 Top 10 Finalist

May 2024 - May 2025 / Centro Escolar University
President's Lister