

# Neiv Gupta

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## EDUCATION

### University of California, Los Angeles

Bachelor of Science in Computer Science

Los Angeles, CA

Expected June 2027

- **Relevant Coursework:** Discrete Structures, Data Structures, Computer Organization, Software Construction, Introduction to Digital Design, Logic Design of Digital Systems, Introduction to Algorithms and Complexity

## PROJECTS

### CudaFire

- [GitHub](#) | CUDA, C++17, C, CMake, GDAL, OpenGL
- Built GPU-accelerated wildfire spread simulator using **CUDA** and the **Rothermel** fire behavior model.
  - Processed **8.7 million terrain cells** in parallel using **8-connected cellular automaton** on RTX 3080.
  - Optimized CUDA kernels with  $16 \times 16$  thread blocks, achieving **7,643x real-time** simulation performance.
  - Integrated GeoTIFF terrain ingestion via **GDAL** and real-time **OpenGL** 3D visualization pipeline.

Dec. 2025 – Present

### BruinMarket

- [GitHub](#) | Go, React, PostgreSQL, WebSockets, Docker, Railway, Vercel
- Launched full-stack UCLA-exclusive student marketplace with real-time peer-to-peer transactions and messaging.
  - Architected backend using **Go** with **PostgreSQL** database and **JWT** authentication and email verification.
  - Deployed production app on **Railway** and **Vercel** with custom domain configuration and **CI/CD** pipeline.

Oct. 2025 – Nov. 2025

### YUM

- [GitHub](#) | React Native (Expo), Node.js, Express.js, MongoDB Atlas, REST APIs
- Developed UCLA mobile dining app providing live dining updates, commenting workflows, and personal profiles.
  - Architected full-stack **MERN** mobile app with **JWT**-based authentication and real-time state synchronization.
  - Implemented **RESTful API** endpoints with Express.js middleware and **MongoDB** aggregation pipelines.

Mar. 2025 – Jun. 2025

### Stairmasters

- [GitHub](#) | Swift
- Developed Swift iOS accessibility app helping UCLA students with disabilities find accessible campus routes.
  - Leveraged Apple's MapKit framework with **MKDrections API** for accessible route calculations and navigation.
  - Mapped elevator access points using Swift Core Location framework for wheelchair-accessible campus navigation.

Aug 2024 – Dec. 2024

## EXPERIENCE

### Software Engineering Intern

Apr. 2025 – Sep. 2025

ThinkScan Technologies

Pleasanton, CA

- Developed AI Agent integrating **YOLOv11** and **OCR** pipelines for object detection and scene reasoning.
- Improved inference accuracy by **34%** with average latency reduced to **25 ms** per frame on Apple M3 Silicon.
- Optimized TinyLlama to scale inference using MLX on Apple M3, reducing latency **22%** and power **14%**.

### Computer Vision Researcher

June 2024 – Aug. 2024

Argonne National Laboratory

Lemont, IL

- Deployed **TensorFlow/PyTorch** CNN models on ARM Cortex-A78 edge nodes for environmental monitoring.
- Built high-performance **CLIP**-based zero-shot classification achieving **93% mAP** across 12 environmental classes.
- Fine-tuned **OpenCLIP ViT-B/32** models on domain-specific environmental datasets for improved accuracy.

### Geographic Information Systems Intern

Apr. 2023 – Aug. 2024

Northern Change Research Laboratory, Brown University

Providence, RI

- Executed **ResNet-50** transfer learning with TensorFlow/PyTorch, processing Sentinel-2 multi-spectral imagery.
- Engineered data pipelines using GDAL/Rasterio, creating **15K+** labeled training samples via QGIS digitization.
- Achieved **14%** accuracy improvement using **U-Net** segmentation architecture with focal loss optimization.

### Student Researcher

Nov. 2021 – Nov. 2023

Doer School of Sustainability, Stanford University

Palo Alto, CA

- Implemented **Random Forest** and **XGBoost** learning algorithms for Sierra Nevada tree species classification.
- Achieved **96%** classification accuracy using ensemble methods on **100,000+** labeled forest imagery samples.
- Developed **LSTM RNN** architecture for wildfire progression prediction from multi-spectral satellite imagery.

## TECHNICAL SKILLS

**Languages:** Java, Python, C, C++, Go, JavaScript, TypeScript, HTML/CSS, XML, JSON, Swift, Bash, SQL, CUDA

**Frameworks:** PyTorch, TensorFlow, LangChain, React, React Native, Node.js, Express.js, Gin, Apple MLX

**Dev. Tools:** Git, Github, Docker, Railway, Vercel, REST APIs, WebSockets, MongoDB, PostgreSQL, OpenGL, CMake

**Libraries:** NumPy, pandas, Matplotlib, Scikit-learn, OpenCV, CLIP, OpenCLIP, YOLO, XGBoost, Tailwind CSS