Thuan Quach

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Education

Georgia Institute of Technology — Atlanta, Georgia
Master of Science in Computer Science — *Aug. 2025 – May 2027*

California State University, Fresno — Fresno, CA
Bachelor of Science in Computer Science (Summa Cum Laude), GPA: 3.97/4.00 — *Aug. 2021 – May 2025*

Experience

Cloud/Cybersecurity Intern — Feb. 2025 – Apr. 2025
Fresno State Technology Services — *Fresno, CA*

- Collaborated in a team of four to enhance an AWS-based SIEM architecture using Amazon S3, AWS Lambda, EC2 with Fluent Bit, OpensSearch Pipelines and OpenSearch Dashboards, and presented findings to AWS, cybersecurity, and IT professionals.
- Expanded ingestion pipeline to handle 3 additional log formats by designing custom regular expressions (Grok patterns).
- Refactored Python scripts to automate log splitting, format conversion, and Amazon S3 uploads, optimizing pipeline throughput to 100,000 logs in under 2 minutes.
- Integrated Kinesis Firehose with OpenSearch, configuring IAM roles and buffering to achieve stable ingestion of 100,000 logs in 3 minutes.
- Developed interactive OpenSearch dashboards to visualize firewall activity and monitor security metrics, uncovering 100+ potential threats.
- Implemented real-time Slack alerts to notify of security events within 5 minutes of detection.

Undergraduate Research Assistant — Jun. 2024 – Dec. 2024
California State University, Fresno (with the U.S. Department of Agriculture) — *Fresno, CA*

- Led the development of a Unity-based simulation with another student, using C# to generate 100+ grapevines in a vineyard with adjustable lighting and automated camera systems.
- Developed scripts to customize grapevine properties, including cluster types, grape size, color, and distribution frequency.
- Designed and implemented a multi-camera setup to capture synchronized outputs: realistic, segmented, and isolated layers, resulting in a throughput of 600+ high-res images in under 5 minutes.
- Documented the full system in a 26-page technical guide, detailing project structure, code functionality, and scene configuration.
- Contributed datasets now supporting research on AI model performance across simulated and real-world image data.

Projects

Blackjack AI with Monte Carlo Reinforcement Learning | *Python, NumPy, Matplotlib*

- Led a team of four to build a Blackjack-playing agent from scratch using Monte Carlo reinforcement learning with exploring starts.
- Trained over 2M episodes with an epsilon-greedy policy, achieving a 43.34% win rate and convergence to optimal strategies.

Facial Recognition with LBP and SVM | *MATLAB*

- Built a facial recognition system using Local Binary Patterns and multi-class SVM on a 250-image dataset (50 subjects × 5), achieving 53% accuracy—over 25× higher than the 2% random baseline.
- Analyzed model performance using confusion matrices and ROC curves; several classes reached over 90% AUC.

Online Minesweeper | *PHP, HTML, CSS, JavaScript, MySQL, XAMPP*

- Built a full-stack Minesweeper game with real-time interactions, dynamic grid generation, and multiple difficulty levels using HTML, CSS, and JavaScript.
- Designed a PHP/MySQL backend to track 60+ users and log 875+ games, including metadata like board size, mine count, outcomes, and duration.