

# Mirabel Vuong

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## EDUCATION

### University of California, Los Angeles

Los Angeles, CA

*Bachelor's in Computer Science and Linguistics*

*Sept. 2023 – Dec. 2026*

**Related Coursework:** Data Structures & Algorithms, Computer Organization, Object-Oriented Programming, Software Construction, Programming Languages, Discrete Structures, Linear Algebra

**Awards:** Regent's Scholar (University of California, San Diego)

## SKILLS

**Languages:** Python (libraries: Pytorch), C/C++, Bash, JavaScript, HTML/CSS, React.js, Node.js, SageMath

**Technologies:** Git, Linux, XCode, Visual Studio, AWS, MongoDB, Docker

## EXPERIENCE

### Undergraduate Security Researcher

June 2025 – Present

*MIT IEEE Undergraduate Research Technology Conference*

*Los Angeles, CA*

- Developed a high-performance **Python** and **SageMath** cryptographic module (BLS12-381) enabling real-time signature verification with **99.9% accuracy** and **p99 latency <100 ms**, validated against Cloudflare's HTTP Message Signatures.
- Engineered secure key management by isolating manager private keys and enforcing constant-time serialization, mitigating side-channel vulnerabilities.
- Reduced attack surface by implementing cryptographic best practices in production-ready code.

### Software Developer

March 2025 – June 2025

*CreativeLabs at UCLA*

*Los Angeles, CA*

- Built and integrated **Node.js** and **MongoDB APIs** with a **React** frontend to enable real-time profile updates, improving data sync speed by **20%** and ensuring persistent, scalable user data storage.
- Designed and implemented dynamic UI components, including a custom video player and profile image upload, improving engagement and accessibility.
- Collaborated in an agile team of **8** developers, conducting code reviews and managing version control via GitHub.

### TeachLA Developer Software Lead

Sept 2024 – Mar 2025

*Association of Computing Machinery at UCLA*

*Los Angeles, CA*

- Led a team of **6** to design and ship *Cookie Jar*, a **React + TypeScript + MongoDB** web app for children's tech education, including interactive games and progress tracking.
- Oversaw project planning, feature prioritization, and merge conflict resolution, reducing development cycle time.

### STEM Library Intern

Jan 2023 – April 2023

*Huntington Beach Public Library*

*Huntington Beach, CA*

- Directed community projects for **40+** children ages 8-12 to educate participants on circuits, computer logic, and basic algorithms.

## PROJECTS

### AWS Lambda Secure Call Assistant — GenAI Hackathon by Imeptus & AWS

July 2025

- Developed and deployed a **serverless call assistant** using **AWS Lambda**, **Transcribe**, **Bedrock (Claude)** to process real-time audio, transcribe speech, and generate intelligent response suggestions for customer support calls.
- Integrated a custom **Data Loss Prevention (DLP)** and threat detection engine to flag **100% of simulated credential leaks** in red-team testing.
- Built a scalable architecture leveraging **event-driven processing** and **semantic analysis** to handle live call streams with sub-second response latency.

### Adversarial Robustness Testing of CNNs with FGSM — Association of Computing Machinery

Dec 2024

- Engineered a **PyTorch** adversarial ML attack pipeline using **Fast Gradient Sign Method (FGSM)** to evaluate CNN robustness under targeted perturbations.
- Achieved **>95% attack success rate** on **MNIST** and **CIFAR-10** datasets (50K images), identifying model weaknesses in production-level architectures.