Mirabel Vuong

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EDUCATION

University of California, Los Angeles — Los Angeles, CA
Bachelor's in Computer Science and Linguistics — *Sept. 2023 – June 2027*
Related Coursework: Data Structures & Algorithms, Computer Organization, Object-Oriented Programming, Software Construction, Programming Languages, Discrete Structures, Linear Algebra, Computational Linguistics
Awards: Regent's Scholarship (University of California)

EXPERIENCE

Security Research Intern — June 2025 – Sept 2025
UCLA Samueli School of Engineering — *Los Angeles, CA*

- Developed a high-performance **Python** and **SageMath** cryptographic module (BLS12-381-based) 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 Engineer — March 2025 – June 2025
CreativeLabs — *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.

Technical Project Manager — Sept 2024 – Mar 2025
TeachLA @ UCLA — *Los Angeles, CA*

- Led a team of **9** to design and ship *Cookie Jar*, a **React** web app for children's tech education, including interactive games and progress tracking.
- Developed secure backend infrastructure using **Node.js, Express,** and **MongoDB** with **JWT authentication (24-hour token expiry)** and **bcrypt encryption**, implementing token verification middleware and input validation across **8** API endpoints including user authentication, points management, and purchase workflows.
- Oversaw project planning, feature prioritization, and merge conflict resolution, reducing development cycle time.

Technology Intern — Jan 2023 – April 2023
Huntington Beach Public Library — *Huntington Beach, CA*

- Provided technical support to library patrons and staff while maintaining proficiency in **integrated library system (ILS) software** for circulation, catalog searches, and account management.

PROJECTS

AWS Lambda Secure Call Assistant — *GenAI Hackathon by Impetus & 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

- Implemented an **FGSM** (Fast Gradient Sign Method) adversarial attack in **PyTorch** by training a CNN and generating imperceptibly perturbed inputs that caused controlled misclassification.
- Achieved >**95% attack success rate** on **MNIST** and **CIFAR-10** datasets ($\sim$ 50K images), identifying model weaknesses in production-level architectures.

SKILLS

Languages: Python (libraries: Pytorch), C/C++, Bash, Java, JavaScript, Haskell, Prolog, Scheme, Rust, HTML/CSS, React.js, Node.js, SageMath, SQL (PostgreSQL)
Technologies: Git, Linux, XCode, Visual Studio, AWS, MongoDB, Docker