

# AYUSH SATYAVARPU

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## EDUCATION

**University of California, Irvine** | B.S, Computer Science, Specialization: Networks, Security, AI/ML **GPA: 3.87 Graduation: 06/2025**  
**Relevant Coursework:** Data Structures & Algorithms, Computer Vision, Machine Learning, Computer and Network Security, Computer Networks, Operating Systems, Software Engineering Principles, Linear Algebra, Discrete Structures, Software Testing, Software Design  
**Extracurriculars:** Vice President of Technology - **Alpha Kappa Psi** | 2nd place, Cyber Collegiate Defense Competition - **Cyber @ UCI**

## SKILLS & INTERESTS

**Languages/Frameworks:** Objective-C, C/C++, Python, Swift, SwiftUI, UIKit, Java, JavaScript, GoLang, MIPS, React, TypeScript, SQL  
**Software:** XCode, AWS, Docker, Linux, Git, Google Cloud Platform (API, JS SDK), Firebase, Android Studio, MongoDB, Jenkins CI/CD  
**Interests:** Cybersecurity, Game/Web Development, AI, Machine Learning, Cloud Computing, AR/VR, Finance

## PROFESSIONAL EXPERIENCE

### APPLE

Sunnyvale, CA

Health Backend Software Engineering Intern

June 2023 - Sept 2023

- Improved upon Apple internal tools that allow employees to manage and test the Health app's interaction with hospital APIs
- Implemented **Java** API endpoints that allow specific data filtering, integrated with caches to reduce **Cassandra DB** calls by ~300%
- Used **React** and **TypeScript** to develop a new UI that adheres to Apple's Human Interface Guidelines and added data summaries to help users quickly understand patterns between passing and failing APIs, and identify large scale incidents
- Placed in the top **10** out of **150** teams in an Apple intern innovation contest (iContest) and presented new ideas to **7** Apple VPs

### UC IRVINE STUDENT CENTER AND EVENTS SERVICES

Irvine, CA

Full Stack Web Developer, Security Engineer

September 2022 - Present

- Engineered and debugged thousands of lines of **Angular** code to produce an internal employee management system for UC Irvine's student center and a liability waiver form used to collect large amounts of legal data for events
- Developed and migrated **.NET & C#** products from outdated, insecure authentication schemes (UCI WebAuth) to higher security **Shibboleth** IDP authentication schemes by redeploying products on different servers, and generated **SAML JWT** local auth tokens
- Utilized **AWS** to combat hack attempts by deploying a reverse proxy and firewall rules reducing malicious probes by **80%**
- Wrote C# code to interact with a Microsoft **SQL Server** database with more than **10,000** rows to effectively sort and display info

### VMWARE

Palo Alto, CA

Security and Compliance Engineering - Software Engineering Intern

June - September 2022

- Saved ~**30** hours/week of engineering capacity by implementing products in **GoLang** that allowed engineers/stakeholders to automate audit evidence gathering from compliance data sources like GitLab and AWS for compliance with **PCI & SOC2 regimes**
- Automated evidence bundle generation with compliance metadata such as attestation info, version history, release tags, and anti-tampering security features such as **SHA256** checksums
- Wrote algorithms to scan internal VMware services and Git branches in order to collect production code for presentation to auditors

### INVIGRID

Sunnyvale, CA

Full Stack Software Engineering Intern

June - September 2021

- Patched ~**70%** of fatal security vulnerabilities by developing a backend API in **Node.js** that performs security scans on **Google Cloud Platform** projects and internal resources (VMs, VPCs, Storage Buckets, SQL Instances) to find and remediate **86** of the most common security vulnerabilities, such as configuring firewalls to protect unauthorized SSH or disabling insecure service accounts
- Designed and programmed a multipage portal using **HTML**, **CSS**, and **JavaScript** where users can detect and patch any vulnerabilities found in their projects, configure and select projects to review, and author new security policies

## PROJECTS

### FINANCETRACKER

- Developed an iOS app with **Swift** and **SwiftUI**, enabling users to log categorized transactions and visualize spending patterns
- Hosted a backend **Firestore NoSQL** database to allow users to store financial transactions and user data all in the cloud by using a password scheme enabling data portability across devices, data reliability via cloud storage, and concurrent profiles on one device
- Encrypted all password information with **SHA256** and **CryptoKit** and stored no plaintext passwords in DB to combat packet sniffing
- Collaborated with Apple designers through 8 iterations for an intuitive UI that aligns with Apple's Human Interface Guidelines.

### CIFAR-10 TRAINER

- Trained a K nearest neighbors, Decision Tree, Logistic Regression, and MLP Neural Network classifiers on the CIFAR-10 CV dataset
- Manually implemented the ML classifiers in **Python** and **NumPy** and analyzed data patterns predicted by each classifier
- Utilized **SciKit Learn**, **PyTorch**, and **Matplotlib** to visualize results & understand pros and cons of each algorithm for CV application

### MESH GENERATOR

- Utilized **OpenCV** and **Python** to calibrate camera parameters like focal length, center coordinates, and 3D translation and rotation
- Captured pictures of a 3D figure using structured illumination in order to associate **NumPy** arrays of points from two different angles
- Leveraged the SciPy **Delaunay** algorithm to transform point clouds into triangle based meshes
- Wrote algorithms to eliminate background, unusable data through foreground and color masks and algorithms to smooth meshes, including triangle pruning, boundary pruning, and point averaging, removing and improving triangle and 3D point data accuracy

- Combined meshes in **MeshLab** to create a full, 3D mesh of the entire figure by using the Poisson based surface reconstruction and point based mesh gluing algorithms

#### COLLAR

- Developed and architected a professional social media networking app with an emphasis on Corporate Social Responsibility that allows employees and employers to connect based on similar interests like DEI, environmental justice, and sustainability
- Used **Android Studio** to develop mockups in **XML** and wrote backend **Java** code handling populating profile pages with user data
- Integrated with **Firebase** to connect Collar accounts with Google/Facebook accounts for a simple onboarding process as well as to store job data, job applications, and users' posts on **Firestore's NoSQL DB**
- Presented the app along with a sales pitch at an international level with thousands of competitors, **placed 4th**

#### EMOJIPINNER

- Developed an iMessage app extension in **Objective-C** and **UIKit**, enabling users to effortlessly pin and insert emojis into iMessages, accelerating access to less frequently used emojis not available in the ever-changing "Frequently Used" section
- Wrote **programmatic UIKit** code coupled with **CoreGraphics** and **CoreAnimation** in order to create a seamless and intuitive UI
- Implemented on-device storage using **CoreData** to save all of the user's pinned emojis after app closure and restarts

#### INVIGRID SECURITY PORTAL

- Developed a backend API that receives a service account enabled with permissions for **Google Cloud Platform** accounts that consults the CIS GCP Vulnerability Benchmarks to automatically detect vulnerabilities in resources like VPC, Compute, and Buckets
- Designed a secure system for users to enable service accounts with the minimum required permissions by associating specific vulnerability checks with APIs that need to be enabled, allowing users to only enable APIs for the checks they want to run
- Implemented an automatic remediation functionality for fatal vulnerabilities, which translated remediation instructions from the CIS benchmark into GCP SDK code that patches vulnerabilities, such as Internet wide SSH while notifying users of potential bugs
- Created a system where users can utilize the portal to automatically configure GCP resources like VPC networks and Compute instances in a default secure manner by regulating ingress and egress rules dependent on the kinds of data stored

#### PETERPORTAL

- Developed features of a website that describes UC Irvine courses, professor reviews, grade distributions, and course planners
- Used **React.js** and **Redux** to implement upvoting and downvoting on user reviews of courses and professors, allowing fellow students to share opinions without writing a full review
- Wrote backend **TypeScript** that validates users as UCI students using Google Authentication and communicates with a **MongoDB** NoSQL database to store 10,000+ documents of vote data, course reviews, and reported/flagged reviews
- Redesigned database schema to scale with spiking user reviews and votes, minimizing database calls by 70% on average

#### IP SUBNET EXTRACTOR

- Created an algorithm that transforms a long list of IP addresses into larger subnet chunks that contain a threshold amount of the IP addresses, allowing for easier blacklisting on firewalls
- Utilized **Python** to create **prefix trie** data structures in order to properly model the data and classify subnets as listed or not

#### LEVEL UP

- Developed new features and debugged thousands of lines of **C#**, **.NET**, and **Angular** code to produce an internal employee management system for UC Irvine's student center
- Worked with numerous external C# libraries, including SMTP, Shibboleth SSO authentication, and UCI's core employee database
- Wrote C# code to interact with a Microsoft **SQL Server** database with more than **10,000** rows to effectively sort and display information