Farhat R. Ahmed

Folsom, CA 95630 **f3ahmed@ucsd.edu | 916-494-3702 |** Portfolio Website | Linkedin

As a computer engineering undergrad at UCSD in my final year, I am seeking internships to contribute and expand my technical skills in a practical industry setting.

Education

Bachelor of Science in Computer Engineering (GPA: 3.9)

University of California San Diego | La Jolla, CA | Expected Graduation Date: 12/2025

Relevant courses taken:

- **CSE**: Advanced Data Structures, Design and Analysis of Algorithms, Computer Organization/ Computer Programming, Engineering Computation/C Introductory Programming Class, Software Tools and Techniques Laboratory, Software Engineering, Intro to Computer Architecture: Software Perspective
- **ECE**: Introduction to Analog Design, Components and Circuit Lab, Circuits/Systems, Linear Systems Fundamentals, Digital Systems/Circuits, Adv. Digital Design Project
- **Math**: Engineering Probability/Statistics, Linear Alg, Discrete Mathematics, Differential Equations
- **Electives**: ML Learning Algorithms, Intro to AI, Parallel Computing(OpenCL), Deep Learning(PyTorch)

Master of Science in Computer Engineering (contiguous BS/MS program)

University of California San Diego | Expected Graduation Date: 12/2026

Technical Skills

Programming Languages: Java, Javascript, Python, Perl, C, C++, C#, YAML, Assembly, React, Verilog, SQL

Software/Frameworks: OpenCL, Cuda, Android Studios, Visual Studios, Cisco Packet Tracer, Computer Vision/EOCV, Linux Terminal, AKIPs Networking Monitoring, Ansible, Jupyter Notebook, Selenium, Pytest, Junit, Emacs, PyTorch, Perl DBI, Docker, scikit-learn, Firebase, Windows Remote Desktop, Bamboo Build

Networking Skills (CyberPatriots/UCAR): Configuring routers/switches**,** IPv4/IPv6, ACLs, VLANs, Inter-VLAN routing, OSPF, DHCP, NAT, SSH protocols, SNMP, CDP, LLDP, DNS, automating shell commands, NTP

Work Experience

Paid Internship at UCSD ATI(Academic Technology Innovation) | July 2024 - present

- Collaborating with a team of student and full-time developers, I leveraged my versatile experience to solve diverse software engineering problems in databases/web applications handling student course information which provide services to thousands of UCSD students and faculty
- Software Engineering role immersed me into diverse industry tools/softwares (database apis/web applications, Perl, C#, Python, Docker, WSO2 API Manager, Bamboo, Windows Remote Desktop, Grouper)
- Crafted complex SQL queries in Java-based grouper templates to efficiently retrieve critical data used by UCSD applications like SAL(student account lookup)
- Expanded UCSD's podcast system with new features for a more dynamic, responsive, and intuitive interface
- Extended functionality of the Perl based stuacct database api, which handles UCSD's student course provisioning, by creating new POST operation and integrating Splunk logging at strategic points
- Created Docker Python Parent Images for new versions and designed bash tests to validate functionality
- Accommodating shift to Grouper, redesigned cloudlabs allocations which displays course virtual lab technologies
- Implemented ability to generate csv file with doorcodes in cinfo which lists scheduled lab courses
- Resolved tickets on a wide array of issues affecting DSMLP(Data Science/Machine Learning Platform) users
- Patched vulnerabilities affecting Python Parent Images and other ITS applications

Research Assistant at SEE Lab | Machine Learning | July 2025 - present

- Lab sponsored by key industry players like Intel, Google, Microsoft, Qualcomm, Oracle
- Robustly coordinated between different researchers while finding research literature and implementing team design plans in expanding Hyper-Spec (developed by distinguished UCSD researchers) which yields useful applications in proteome mapping, drug/disease research, and microbiome studies
- Using Lovain algorithm, overhauled Hyperdimensional Computing algorithm Hypersec (uses Nvidia GPU parallelization) by implementing Incremental Clustering for mass spectrometry protein spectra data to efficiently incorporate new data into clustering analysis without total reclustering

Paid Internship at UCAR/NCAR| Network Engineering | June 2023 - September 2024

(federally funded atmospheric research facility)

- Working in the NETS team with student interns and full-time network engineers, I showed initiative in developing innovative approaches to solve challenging problems of the expansive UCAR network utilized by climate scientists
- Automated network processes through Python scripting to improve network efficiency
- For easier maintenance of UCAR's network database, revamped existing database 'Portlist' built on Perl by combining Python and AKIPS(network monitoring software)
- Collaborated in creating a program from scratch to check the state of UCAR's out of band network(backup to main network)
- Enabled simpler configuration for UCAR's land-lines by converting existing configuration file format(SCCP) to MGCP format through Python file parsing
- Enhanced login efficiency by automating SSH key validation to consolidate device keys in a global file
- Simplified Ansible playbooks that update Cisco and Juniper accounts to call a single accounts file
- To ensure idempotency, simplified NTP/ACL setup and config fetching playbooks using native Ansible modules to replace issuing raw commands

Projects

Viterbi Decoder | April - June 2025

- In System Verilog, built a decoder which wields the Viterbi algorithm with a hamming distance based branch metric to select the path with the least error to decode data encoded by a convolutional encoder
- Decoder incorporates RTL state machine and memory while non-recursive encoder relies on XOR reduction

Face Image Age Detector: Deep Learning Project | January - March 2025

- Using Pytorch, created convolutional neural networks to predict age range based on Kaggle dataset of face images
- Constructed/Tested VGG-16, DenseNet, ResNet, and Inception convolutional neural networks

Triton Mates: Software Engineering Course Group Project | September - December 2024

- Built a web app using Node Js/React/Firebase for roommates to coordinate tasks and resolve conflicts with a fun points system encouraging participation
- Designed and implemented the backend of critical aspects like roommate task components, event components, points, user profiles, and conflict resolution wizard.
- Took initiative in facilitating technical discussions and completing stalled tasks

Problematic Internet Use Predictor: Machine Learning Project | September - December 2024

- Preprocessed Kaggle Dataset by imputing random values for null values, removing excessively null features
- Predicted Internet Severity Impairment Index (SII) using Linear Regression and Random Forest models with hyperparameter tuning

IEEE UCSD Quarterly Project | April - June 2024

- With a team of fellow students, built a flask based app displaying all current campus events in a single unified environment by utilizing selenium to scrape club instagrams with Jupyter Notebook Python scripts

Deep Learning with Neural Networks with PyTorch Coursera Certificate

- Logistic Regression/Convolutional Neural Networks, Batch Norm., Dropout, Xavier Method, Gradient Descent