SIMRAN DHAWAN

Location: Santa Clara, CA
Contact: +1-6692646586
E-mail: sdhawan@scu.edu

EDUCATION

Degree	Specialization	Institute/School	Graduation	GPA
MS	Computer Science and Engineering	Santa Clara University	March, 2025 (expected)	3.85/4.0
B.Tech	Electronics and Communication Engineering	National Institute of Technology, Kurukshetra	2018	9.05/10

TECHNICAL SKILLS

Programming Languages: C++, C, Python, Bash, SQL, Assembly, VHDL, Matlab, Embedded C++, ReactJS, NodeJS
Tools: Perforce, GIT, Linux, Source Insight, Visual Studio Code, Docker, Kubernetes, Scrum, Jira, Helm

EXPERIENCE

Qualcomm, San Diego **Intern, June 2024 – September 2024**

- Containerized the Modem Simulator app, deployed it via Kubernetes, adapted it to a NETCONF/YANG configuration framework and enabled its configuration management by integrating it with a multithreaded C++ module.

Qualcomm India Private Limited, Noida, India **Senior Software Engineer, July 2019 – April 2023**

- Took ownership of a multithreaded C++ module for messages flow between the L2-L1 layer of 5G modem FSM100xx.
- Took ownership of Device to Host and Host to Device IPA interfaces and deployed robust queues for data sharing between the two modules using C++, resulting in streamlining the interaction process and enriching the efficiency.
- Led design, development, validation and testing of FSM200xx L2-L1 layer in multithreaded C++ RTOS environment.
- Designed the Field Test Mode for FSM200xx's uplink channel, utilizing MSGR for statistical data collection across instruction units, boosting overall efficiency.
- Applied complex algorithms like LDPC decoder, DMRS symbol generator, Demodulation, Interleaving, PN sequence generator, Zadoff-Chu sequence etc for L1 receiver uplink channels, enhancing functionalities of the FSM100xx Modem.
- Engineered an automated lab testing platform using Python for the physical layer, diminishing the manual effort and facilitating seamless crash log analysis and system reboots.
- Resolved intricate customer issues, ensuring comprehensive testing and efficient data sharing between critical modules.

Wisig Networks Private Limited, Hyderabad, India **Research Engineer, July 2018 – July 2019**

- Developed compliant PRACH Transmitter and Receiver in C according to 3GPP 5G standards, ensuring reliable signal transmission and detection of correct preambles and time delay, thus calculating UE (User Equipment) location.
- Utilized efficient Fixed Point Programming techniques to optimize performance for on chip programming.
- Optimized PN sequence generation in C employing bit operations, reducing the space utilization by more than 5 times.

INTERNSHIPS

- **Bit Mapper Integration Private Limited:**Implemented functions for Scalar and Vector processing for the DSP library improving the processing time by 10% using C.
- **UV Soft Technologies Private Limited:** Owned projects in Embedded C using ATmega 8 microcontroller including Line follower, Obstacle avoider, Edge Detector, Gesture Controlled Robot and DTMF controlled Wireless Robot.

PROJECT

- Implemented a functional web server handling concurrent HTTP 1.0 and 1.1 requests with an event loop. The clients were connected via socket. The server handled both server and client errors using C++.
- Designed a custom UDP protocol in C where the client performed request authentication and message validation.
- Developed a music concert service which stored the data in MongoDB and handled the user request in the Flask backend web server. The microservice was represented in DockerFile and deployed on Kubernetes leveraging OpenShift platform.
- Engineered a publisher subscriber system in Python with two message brokers using Flask backend and deployed it on AWS EC2 instances. Used custom replication protocol and heartbeat protocol to make the system fault tolerant to failure of any one of brokers. The failed broker restored its state after restarting and became consistent with the other broker by getting all the metadata which happened during its downtime from the other broker. The failures remained transparent to end users.
- Designed, developed and evaluated performance of a facial recognition model employing machine learning techniques (SVM, k-NN, Bayesian Classifier, Decision Tree, Ensemble) and data augmentation (OpenCV, Keras) was performed where I achieved 91.02% accuracy through extensive hyperparameter tuning. Feature extraction was done with PCA and LDA.
- Built a Social Media Platform with MySQL for efficient database management, utilizing indexes, triggers, and stored procedures. Created user-friendly interfaces in ReactJS and backend functionality with Express JS and NodeJS to facilitate user interactions like posts, likes, and comments among friends.

ACHIEVEMENTS

- **Top 5 in class of 120** in ECE Department.
- Organized events on behalf of **QWomen Board** which provides opportunities encouraging leadership, mentorship and career development of all women and allies at Qualcomm.
- **Orion Insta Award by Qualcomm** for excellent job on FSM100xx FAPI Module.