

Moteen Shah

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Education

Veermata Jijabai Technological Institute

Bachelors of Technology in Electronics and Telecommunication Engineering

Mumbai

Feb 2021 - June 2024

Work Experience

Systems and Networking Lab, NUS Computing

June 2023 - Aug 2023, June 2024 - Present

WEISER Group - Research Intern

Prof. Ambuj Varshney

- Developed a highly efficient baseband generator with RTOS scheduling and timing controls.
- Publication:** Explored a new paradigm of communication using **Tunnel Diode Oscillators(TDO's)** with **sub-milliwatt** power usage, enhancing the current communication models that uses milliwatts of power for communication.
- Developing a **SIMO communication model** based on TDO's aiming for communication with **high data throughput** and **sub milliwatt power consumption**.

Open Source Developer and Mentee with AOSC

July 2022 - Oct 2022

Open Source Promotion Plan (OSPP 2022)

- Mainline development of Allwinner D1 SoC based on RISC-V ISA.
- Co-developed drivers such as mmc, gpio, clock, etc to support the new SOC
- Techstack:** Crosscompilation toolchains, U-Boot, RISC-V ISA, C Programming, Git, Patch based workflow.

Upside Down Labs

Oct 2021 - Dec 2021

Hardware Design Intern

- Developed a **low-cost ECG monitor** that can be connected into any microcontroller and transmit the output ECG signal to any location in the globe over the internet.
- Developed a **C++ library** for biopotential signal(EMG, ECG, EOG and EEG) processing.
- Developed a **prototype for Bionic hand** that amputees can control at will.

Functional Weeder | RaspberryPi, Elixir/Erlang, Robotic Arm Design

Oct 2021 - Mar 2022

Team Leader

- Led my team to **top 12** in All India EYRC under Functional-Weeder theme.
- Implemented **obstacle avoidance and navigation** in a grid for a robot using Elixir a functional Programming Language.
- Developed target detection and payload dropping mechanism.
- Used Phoenix Web framework to establish communication between client and server using Websockets and PubSub.

Projects

Esp32-audio-router | ESP32, Embedded C/C++, ESPIDF, JS, HTML/CSS

Sept 2021 - Oct 2021

- Utilised **I2S communication protocol** for sending audio data packets over Bluetooth.
- Deployed **a2dp profile** for Bluetooth.
- Established communication between peripheral components using **Serial and I2C Communication protocols**.
- Developed communication drivers** for external WM8960 module.

Technical Skills

Languages	: Embedded C, C/C++, Python, JavaScript.
Frameworks	: ESP-IDF, Arduino IDE, React.JS, riscv-gnu-toolchain.
Developer Tools	: ESP32, Linux, CMake, FPGA, Arduino, Raspberry Pi, RISC-V, Git, VS Code.
Libraries	: freeRTOS, NumPy, Matplotlib, OpenCV.

Achievements/Extra-Curriculars

- MobiCom 23 Student Research Competition award winner (undergraduate category).
- Ex. General Secretary** at Society of Robotics and Automation (SRA), VJTI.
- Led my team to **Top 12 in the All India EYantra Robotics Competition(EYRC)** under the theme - Agricultural Functional Weeder, IIT Bombay.
- Secured **3rd position in Drone Project** conducted by Riders.ai amongst 200+ participants.
- Conducted lectures on **Control Systems like PID Control** to over **150 freshmen students** under the Wall-E : Line Following and Self Balancing Robot Workshop.