Farogh Iftekhar

Embedded design engineer

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Portfolio

F40/3 Gulmohar Apartments
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About

I'm a technology enthusiast and a polymath. I love solving problems by using knowledge from every corner. I have insight of a product lifecycle ranging from designing a prototype to testing and deployment of an embedded product. I still am in pursuit of my quest for acquiring technical proficiency with real time system. I'm working towards making a meaningful contribution in the field of technology which can help the greater good.

I am presently working in a Delhi based start-up where we designed a system from scratch, called **DeJoule**, which uses cutting edge technology such as IOT, AI, machine learning and distributed computing which lead to optimum utilization of energy. With the help of DeJoule, we are able to reduce electricity consumption by 30% to 40%. It helps in minimizing wastages in energy processes in industrial buildings across India which leads to the electrification of more than 90+ household every day.

Research Interest

Designing embedded architecture, Real-time systems, Augmented Humanity, High-Speed PCB design using Altium, IOT, Low power devices, Embedded Security and Application of blockchain in hardware.

Professional Experience

3+ Years

Smart Joules pvt.ltd -Embedded System Team Lead/ Developer
January 2017 – Present

Projects: DeJoule IOT controllers V2 and V3.

Technology: STM32 controllers, TI- MODCC3200, iMX6 quad, SATA, mini PCI, USB 3, Ethernet, LAN, RS485, ADC, DAC, Sensors, various power supplies and logics Ic's. Python, Embedded C, Tina simulations, TI-workbench, Altium, HTML &CSS and PyQT.

Being the lead, I'm responsible for the designing and development of reliable and affordable hardware's and for maintaining the production and quality of products. Engineered, deployed and managing 300+ different BMS controllers across 10 sites in India.

- I have engineered and rolled out 3 versions of DeJoule-Smart building energy management controllers which have standard BMS capabilities offering 7+ different customized product portfolio. The device can execute complex time series algorithm in real-time, runs decentralized PID software which observe and control valves and actuators to optimize operations of the HVAC system. The controllers are designed to self-diagnosed the faults and send logs to the server. Designed a NAS (Network Storage) device which stores the data points from different controllers which process hundreds of data point per minute.
- Increased the reliability of data by improving the analog circuits and eliminated the harmonics interferences occurring due to VFD's and also solved the controller hang-up

by introducing a separate watchdog controller. Reduced the command execution time from 5 seconds to 1 second by optimising the hardware architecture.

- Started as first developer, today I lead a team of 4+ embedded engineers, mentoring undergraduate students of Joule Lab. I follow an agile process to plan & track the development, testing & release timeline. Setup the production pipeline for the controllers and reduced the cost by 15-20% by better component selection and vendor management and relations. Formulated a process for better design review and documentation.
- Drafted different policies for the company with the CEO and other colleagues. Conducted the placement drives in different colleges of India, interviewed 1000+ students and hired best minds.

Research Internship

Indian Council of Agriculture Research, CSSRI
December 2015 – September 2016, Lucknow

Worked under the guidance of Prof. Dr. C.L. Verma (CSSRI,) & Dr. R.K. Singh (NEFORD) to develop the automation solutions for affordable precision farming tools for farmers & researchers alike. Designed hardware to solve the problem of saline land reclamation by automating the optimum gypsum dosage. Also, developed a hardware to measure groundwater level. Performed pilot experiment in 2 scientifically regulated farms in Patwakheda, UP-India.

Education

Uttarakhand Technical University / B. Tech Applied Electronics and Instrumentation
2012 - 2016

Undergraduate Research Assistant with Dr. Sandeep Sharma in his embedded system lab. Technical Lead of IEEE Student Branch.

Grade: Overall 74% (German Equivalent 2.2)

College Projects

Autonomous Bot for detecting diseases in cotton plants
July 2014 – January 2015,

Designed an autonomous bot which uses open CV to detect abnormalities in cotton flowers and spray chemicals on infected one. I had contributed in the design of the mechanical structure of the bot, embedded systems for controlling motors, actuators, sensors, cameras and power system.

Designing an all-terrain vehicle (ATV) for BAJA India & BSI, 2015
December 2012 – January 2015,

With a team of 30 engineers, we had designed and manufactured an ATV for Mahindra BAJA and BSI completion and secured 6^{th} position in endurance from 150 teams.

My contribution was in the designing of an entire electrical system for the vehicle with a dashboard along with the designing and calibration of the braking system.

Extra-curricular Activities

- Delivered several workshops on PCB designing, Microcontrollers and circuit designs.
- Mentored many college students in their minor and major projects. Organized several workshops on designing of Quadcopter's, Line followers, Fight Bots.
- I have been invited as the guest speaker by the Ramanujan college of engineering, Delhi University.
- One of the winners of a Hackathon organized by EESL.