Aayush Mishra

📍 Mumbai, India ✉ G-Mail 📞 +91-8424966294 in Linked-In ⬡ Github

About

Robotics and Embedded Software Engineer with 2 years of experience integrating **Mechanical, Electrical-Electronics, and Computer Science** principles to build innovative solutions and projects.

Education

MIT Manipal, Manipal   *July 2023 – Present*
B.Tech in Mechatronics (Robotics and Automation)

- CGPA: 7.14/10.00
- **Coursework:** Data Structures, Control Systems, Digital and Analog Design, Micro-controllers.

Experience

UG Researcher   *Udupi*
MIT Manipal   *Sept 2024 – Present*

- Engineered a system to identify/classify flying objects (UAVs/drones) into Type 1/2/3 threat levels using micro-Doppler radar data.
- Integrated **FMCW and SAR modules for signal acquisition and imaging**. Processed radar signals and **generated micro-Doppler spectrograms using MATLAB (Signal Processing, Phased Array Toolbox)**.
- Designed and **trained CNN and Transformer-based models in Python (PyTorch, TensorFlow)** with large, augmented datasets.

Skills and Competencies

Programming: Embedded C, Python, MATLAB, C++

Design and Modeling:

1) PCB Design (KiCAD, Fritzing, Proteus)

2) CAD Modeling (Fusion 360, Solidworks)

Technologies: Git/GitHub, VS Code, MATLAB Live Scripts, Keil uVision, Arduino IDE, Jupyter Notebook.

Courses: Micro-Controllers, Linear Control Systems, Probability, Signal Processing and Analysis, Mechanical Design and Element Analysis.

Web Development: HTML/CSS, JavaScript, TypeScript, ReactJS, TailwindCSS, NextJS, API/SDK Integration.

Projects

Digital Tachometer using MSP432P401R   *GitHub Link* ⬈

- Built a Digital Tachometer for measuring rotational speed, and **programmed it using MSP432P401R micro-controller in Embedded C**.
- Tools Used: Embedded C, Keil uVision

PCB Design for Phase Shift Oscillator   *EasyEDA Profile* ⬈

- Engineered a PCB for a **Sine Wave Phase Shift Oscillator using Operational Amplifiers**.
- Achieved **stable frequency generation by precise component selection and circuit optimization**. Focused on minimizing noise, improving signal integrity, and maintaining compact board layout.
- Tools Used: KiCAD

Automatic Motion Detection System using PLC   *GitHub Link* ⬈

- Engineered a Sensor-Based Automated Motion Detection system using **Bosch Rexroth PLC, Arduino**

Mega 2560, Ultrasonic Sensors, Buck and Boost Converters, with **Breadboard and PCB Design in Fritzing and Simulation in Proteus**.

- ○ Tools Used: C++, Proteus, Fritzing.

PI and PID Controller Designs for Control Systems *GitHub Link*

- ○ Designed and tuned PI and PID Controllers for a Linear Dynamic System **using Root Locus and Bode Analysis to optimize stability and performance** with the help of Control System Toolbox Add-On.
- ○ Tools Used: MATLAB