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About Me

I'm a hands-on hardware and mechatronics engineer with over 3+ years of experience, first at TCS in India and now at HARDWARIO in the Czech Republic. I enjoy taking ideas from a customer's initial requirements all the way through to reliable, real-world products. I've worked on -

1. End-to-End Hardware Development & Customer Interaction.
2. System Architecture & Component Selection.
3. Schematic & PCB Design (Multilayer, RF, High-Speed).
4. Mechanical & Firmware Integration.
5. Cross-functional team collaboration
6. Testing, Validation & Iterative Prototyping

Work Experience

Mechatronics Engineer (as a hardware developer)   **03/2025-Present**
HARDWARIO, Liberec, Czech Republic
- Executed **end-to-end hardware development** from client specs to production, covering **system architecture**, **schematic design**, **PCB layout**, **mechanical integration**, **firmware** support, and **prototype** validation.
- Developed PCB layouts across single-layer to **multi-layer**, **high-speed**, and **RF** designs, ensuring manufacturability and reliability.
- Select components strategically to balance **cost**, **performance**, and **availability**, and generate comprehensive **BOMs** and **Gerber** files for production.
- Conduct rigorous verification, **testing**, and **troubleshooting**, working closely with **embedded** software engineers for hardware-software integration.
- Lead iterative **prototyping** and collaborate with mechanical design teams to deliver robust, **production**-ready products.
- Support post-launch activities, including field testing and continuous product improvement, showcasing **end-to-end ownership**.

Mechatronics Systems Engineer   **03/2021 – 07/2022**
Tata Consultancy Services, Bhubaneswar, India -
- Handled **end-to-end electronic product development** including **block definition**, **power architecture**, PCB design, **3D integration**, **firmware** interface, and **prototype testing.**
- Collaborated directly with clients to define **technical specifications**, **translating requirements** into **functional** and **reliable hardware designs**.
- Developed schematics and PCB layouts from **single-layer to multi-layer boards**, including high-speed and **RF** designs.
- Specialized in component selection, **BOM** creation, and **Gerber** file generation, ensuring compatibility with client manufacturing processes.
- Managed design **verification**, **testing**, and **troubleshooting** within client-specific frameworks, ensuring high-quality deliverables under tight schedules**.**
- Supported multiple projects simultaneously, demonstrating adaptability and breadth of experience across different hardware applications.

Education

Masters in Mechatronics - Master's Thesis: "Gesture Control Robotic Arm using Image Processing".   **09.2022-06.2024**
Technical University of Liberec (Tul), Liberec, Czech Republic. **Grade: 2**
Bachelors in Mechanical Engineering - Bachelor's Thesis: "Simulation & Analysis of Articulated Robotic Arm".   **08.2016-07.2020**
Pune University, Pune, India **Grade: 1.7**

Projects

- **UROGRAM: Multi-Sensor Wireless Module for Industrial Applications**

  System architecture definition, component selection, schematic design, and 4-layer PCB layout with BLE & sensor integration. Supported enclosure fit using 3D CAD and collaborated with firmware team for I2C/SPI interface validation and pin mapping.

- **LoRaWAN-Enabled Methane Sensor Node for Environmental Monitoring**

  Integrated MIPEX gas sensor with LoRa radio on low-power 2-layer PCB. Optimized layout for analog signals and battery life. Designed enclosure interface and worked closely with firmware team to enable SPI communication and power management routines.

- **High-Power 2.5W Video Transmitter (VTx) for UAV Systems**

  Designed RF-optimized 4-layer PCB with impedance control and EMI mitigation. Handled power path planning, heat dissipation strategies, and thermal via placement. Coordinated with mechanical design for airflow and firmware for telemetry and enable logic.

Skills

Requirements & Planning	Microsoft Office, Notion (Project requirements, project planning etc.)
System Design & Simulation	LTspice / PSpice (circuit simulation), MATLAB / Simulink (control systems or mechatronics)
Schematic & PCB Design	KiCad, 3D CAD integration	Fusion 360 for mechanical integration.
BOM & Component Management	Excel	Google Sheets (BOM), SnapEDA (for component sourcing), BOM management in KiCad plugins or ERP/MRP systems
Gerber & CAM Prep	KiCad's built-in Gerber export, Gerbv (for Gerber preview and checks)
Prototyping & Assembly	Soldering station, hot air gun, 3D printer (for enclosures)
Testing & Debugging	Oscilloscope, multimeter, function generator,Logic analyzer, Spectrum analyzer.
Firmware/Embedded SW Integration	Collaboration with Firmware	Embedded Teams (VS Code / Keil (embedded dev), Git.
Production & Delivery	Experienced Communicator with PCB fab houses (JLCPCB, PCBWay) etc.

Languages

English Expert	**German** Intermediate	**Czech** Beginner

Paper Published

Analysis And Modelling Of Trainable Motion Follower Robotic Arm : DOI:20.18001.GSJ.2022.V9I4.22.39002