Vishwas Navada B

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Hardware design engineer with 6 years of work experience in hardware design and development. Currently, I'm pursuing my master's degree in High-Speed Digital Engineering at the University of Colorado Boulder. Apart from work, I'm an amateur radio enthusiast and an electronics hobbyist.

Education

Academic Qualifications

- **University of Colorado Boulder** — **Boulder, CO**
  M.S Electrical and Computer Energy Engineering, — *2023–2025*
- **Bangalore Institute of Technology, VTU** — **Bengaluru**
  B.E Electronics and Instrumentation Engineering , Aggregate:70.19%, CGPA:7.77 — *2013–2017*
- **Viveka Pre-University College** — **Kota, Udupi**
  XII, PCME, Aggregate:89.50% — *2011–2013*

Work Experience

- **Tejas Networks India Pvt. Ltd.** — **Electronics city, Bengaluru**
  Lead Hardware Design Engineer — *April 2019–July 2023*

  4.5 years of strong exposure in high-speed board design.
  Worked on different aspects of design during the complete life-cycle of products including schematics, SI, PCB Stack-up, Layout CAD, BOM/Life-cycle management, Board bring-up, functional testing, DVT measurements and validation amongst others.
  Implemented several FPGA-based designs including Verilog coding and STA analysis.
  Tackled several critical field issues for major customer deployments with fast workarounds/fixes.

- **Robert Bosch Centre for Cyber-Physical Systems** — **IISc, Bengaluru**
  Hardware Design Engineer — *April 2018–March 2019*

  Built an Ultra Wide Band (UWB) beacon system for Autonomous Navigation of Drones. Developed an autonomous charging pad for quadcopters and hexacopters. Designed a system for the Actuation and control of Shape Memory Alloy-based soft grippers.

- **Openwater.in Pvt. Ltd.** — **IISc, Bengaluru**
  Hardware Design Engineer — *July 2017–April 2018*

  Worked on the design and development of Electronic systems for the water filtration unit. Designed a customized power supply to drive the whole water purification system. Designed and tested wireless water flow meters.

- **Instrumentation and Applied Physics Department, IISc** — **Bengaluru**
  Project Assistant — *March 2017–May 2017*

  Developed smart IoT based water quality sensors and flow meters

Notable Projects

- **Design and development for CPE-64** *'An Enterprise switch'*

This is an enterprise switch with 32G/64G/120G switching capacity, My responsibilities included: Complete Schematics Design, Board Design and cross-platform functional analysis.
Verilog coding for FPGAs

- **Design and development for IO-U3:** *'An I/O Card for TJ1600I platform'*

  This card acts as an OTN Processor which can handle multiple 400Gbps optical inputs from devices like CFP2, QSFP-DD etc.
  My responsibilities included: Complete Schematics Design, Board Design and cross-platform functional analysis.
  Verilog coding for FPGAs
- **Design and development for S-SF1:** *'Fabric Card for TJ1600S platform'*

  This card performs cell-based switching and is used as a Fabric Element for TJ1600S Spine Chassis, providing $53G$ SerDes interconnect (up to $9.6Tbps$) to Leaf-based subsystems.
  Complete Schematics Design and cross-platform functional analysis.
  Deciding PCB stack up, BoM management, SI and PI analysis, and assisting the Layout team to meet all Hardware and manufacturing recommendations.
  Verilog coding for CFPGA (Altera Cyclone V) and STA analysis for all necessary interfaces.
  Complete bring-up and testing of the card including traffic testing of $56G$ PAM4 links.
- **Design and development for the S-PSC:***'Power Supply Controller for TJ1600S platform'*

  This card controls multiple power supplies based on a custom algorithm and load requirements. Complete Schematics Design and cross-platform functional analysis.
  Deciding PCB stack up, BoM management, SI and PI analysis, and assisting the Layout team to meet all Hardware and manufacturing recommendations.
  Verilog coding for CFPGA (Altera Cyclone V) and STA analysis for all necessary interfaces. Complete bring-up and testing of the card.
- **Autonomous Drone Charging Pad** *'A smart charger atop street lights'*

  Autonomous drone charging pad that uses UWB precision localisation and smart charging technology to charge drones
  My responsibilities included: Complete Schematics Design, Board Design and embedded systems for the navigation and charging systems

Under Graduate/Hobby Projects

- **Smart Beehive monitoring systems (06/2021-Present)** *'Bee health monitoring using audio analysis and TinyML'*
- **Touch-free retrofit switches for COVID-19 (7/2020-Present)** *'Retrofit module fits on the existing switchboard to turn on and turn off the switches'*
- **Raksha (04/2020 – 06/2020)** *'Vitals monitoring wearable for early detection of COVID-19'*
- **Azure smart energy meter with IoT Locker (10/2019 – 11/2019)** *'Azure cloud-based smart energy meter that monitors the power consumption and works as a smart locker'*
- **Vega - Drone Health Monitoring Systems (04/2019 – 06/2019)** *'Predictive maintenance for drones using AI and pattern recognition of vibrations'*
- **Smart Soft Switch (11/2018 – 12/2018)** *'Infineon MOSFET SoftSwitch for Spark Free connection in Drones'*
- **Simultaneous Localisation And Mapping (SLAM) using drones (01/2017-05/2017)** *'Simultaneous Localisation and Mapping using a quadcopter and a Kinect Camera'*

Technical and Personal skills

- **Programming Languages:** Proficient in C, Python, MatLab, Arduino, TeX, Verilog and bash scripting.

- **Industry Software Skills:** DxDesigner, Expedition, Allegro, KiCad, Eagle, Sigrity Power SI, Sigrity, SIWave, PCIe, DDR, PCB, Oscilloscope, Mentor, Cadence, FreeCAD, Matlab, Proteus, Eclipse, MS Office
- **Protocols and Technologies:** I2C, SPI, SATA, SGMII, DDR3, DDR4, PmBUS, PCIe, SD, eMMC, USB, XAUI and other high-speed protocols
- **General Business Skills:** Public Speaking Skills, Good presentation skills, Works well in a team.
- **Other:** Good soldering and rapid prototyping skills, Can write well organised and structured reports(Written many write-ups, blogs on electronics).

Academic Distinctions and Publications

- **Tata Crucible Hackathon 2021:** *Won 1st prize for the logistics solution using IoT Hardware*
- **Hardware Hackathons (04/2015-Present):**
  - *Most practical use of AI@Brainium,*
  - *Best healthcare application@ONSemi Hackathon,*
  - *1st @ Reimagine Waste, IISc,*
  - *1st @ Infineon hackathon,*
  - *1st @ ABB Makeathon,*
  - *1st @ CeBIT IoT Hackathon,*
  - *3rd @ MediaTekGlobal IoT challenge,*
  - *Best Geek Group @ Mercedes Benz Hack.Bangalore*
- **Robo Racing:** *1st @ Pravega, IISc, Aathmatrisha, PESU NMIT College fests*
- **Quizzing:** *2nd @ BrainBox Quizzing, 2nd @TCS Tech Bytes, 1st@ Wright Brothers, Semi-finalist International Ericsson Awards*
- **Talks:** *Delivered talks on*
  - *Applications of Edge AI(03/2022)*
  - *Bridging the gap between industry and academia (02/2021)*
  - *Why attending hackathons is important (02/2020)*
  - *Opensource Electronics (07/2019)*
  - *LoRa Communication Protocol (06/2018)*

- **Publications:**
  - *Agrosquad - An IoT based precision agriculture using UAV and low-power soil multi-sensor*
  - *Robust and Scalable Techniques for TWR and TDoA based localization using Ultra Wide Band Radios*
  - *Human-machine interaction systems encounter convergence*
  - *LoRa Communication Protocol*

Interests and extra-curricular activity

- Actively involved and organised Robo racing competition in college fest during 2016, Conducted Free workshops on balsa wood gliders and open-source electronics to students
- Open-source electronics contributor: I regularly write articles and blogs on Hackster.io and Element14
- I am an amateur radio operator with call sign VU3TEY, I build various antennas and explore the hobby
- I am also an avid cyclist, having completed many long-distance rides. Other interests include watercolour painting and sketching