Ibrahim Nazir Sangi

Chicago, Illinois 60659 (willing to re-locate) (Status: H1-B approved until Oct 2022)
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Full Stack Hardware Engineer

Proven track record of developing innovative products from concept to production, with over five years of professional experience overseeing hardware, firmware, and electrical engineering processes.

A versatile, passionate, self-motivated engineering professional with a product-oriented designing and developing skills. Technopreneur with over decades of experience in building innovative electronics products started from his own garage. Exceptional communicator consistently partnering cross-functional teams to ensure operational success. Analytical, innovative, and resourceful leader accustomed to driving productivity and ensuring timely project completion. Outstanding ability to analyze and solve complex problems. Excellent in system design concepts and achieving hardware specifications.

Embedded System Design / Programming Assembly, C, C++, Python / Digital and Analog Circuit Design & Analysis / Design Mixed Signal Modules / Power Supply Design / Mechanical Design / Analog and Digital Signal Processing / Product Design & Development / Schematic & PCB Designer / Hardware & Software Debugging / Troubleshooting & Issue Resolution / Soldering SMD / Bring-up / Prototyping / BGA / Validation / Testing / PCBA / R&D

PROFESSIONAL EXPERIENCE

Design Engineer (Computer Hardware/electrical) (Jan 2019 to Present) **Rex Robotics—Naperville, IL**

- Setup a low budget research and development laboratory for board bring-up, rework, debugging and testing.
- Hacked Arduino hardware based on STM32 microcontrollers to have our own customized firmware and device drivers using STM32 toolchain.
- Introduced the new design tool for rapid prototyping and to reduce product design cycle.
- Designed and developed a high-speed board for multiple CSI-2/Parallel, camera streams with Xilinx Zynq.
- Device drivers, device tree binding, Kernel configurations, software/hardware interfacing with Linux video framework (V4L2) and Gstreamer for stereo vision applications.
- Developed a complete embedded and hardware solution for an autonomous rover. Including schematics, PCB, embedded code for STM32 microcontroller and python scripts.

Graduate Research Assistant (Jan 2017 to May 2018) **Eastern Illinois University—Charleston, IL**

- Designed, and programmed a self-navigated robot with C at the **National Robotics Challenge** in 2018
- Led a team of five to design a partial automated robot and program with C to an Arduino microcontroller at ATMAE robotics competition in 2017 (**Won fourth position, out of 10**)

Design Engineer (Jun 2012 to Aug 2016) **And-Or Logic—Islamabad, Pakistan**

- Crafted a high-speed PCB (1Gbps and 3.4Gbps/10Gbps) motherboard **in 15 days with zero rework** required
- **Slashed project timelines by three months** by implementing a new hardware designing software for the company
- **Created low-level, highly efficient APIs** for multiple microcontrollers, later distributed company wide. Reduced time and labor for each project by 10%. Enhanced firmware 10% by modifying low/high-level APIs, enabling data to almost send in real time
- **Drastically improved debugging performance**, designing and implementing a new debugging device
- Developed power systems up to 6KVA (inverter, charge controllers)
- **Cut BOM costs by 20% ($200 per prototype)** through negotiations and partnerships with Chinese vendors; researched available resources and changed the equivalent part number
- **Championed improvements to smart battery firmware/hardware.** Optimized APIs, removed extra loops, and altered hardware components to increase self-discharge from three days to six months
- Enhanced hardware module in a production model, **improving battery performance from two to 30 days; created a 90% reduction** in BOM costs
- Achieved successful **production of 70 units with 99.9% accuracy**

Founder (Apr 2006 to Aug 2016) **IbrahimLabs—Rawalpindi, Pakistan**

- Hardware solution provider according to customers' requirements (local and international).
- Building own innovative ideas and hardware solutions to automate certain daily tasks.
- Working on projects-based solutions to learn and earn by doing rapid prototyping.
- Writing blogs for open-source coding/hardware for young engineers to learn.

TECHNICAL PROFICIENCIES

- Altium Designer, Cadence OrCAD, Allegro, Capture, Layout, PCB editor, Proteus, PSpice
- Oscilloscope, Logic Analyzers, Power Supplies, Soldering Iron, DMM, Hot-air rework station.
- Keil µVision, MPLAB, MATLAB, Sublime text, IntelliJ IDEA, Eclipse, GitHub, SVN, AVR studio, Microsoft Office (Word, Excel, PPT), Visual Studio & Visio, IAR Embedded workbench, Windows, Linux, FreeRTOS, Vivado
- UART, SPI, GPIO, I2C, SMbus, PMbus, RS232, RS485, JTAG, USB, ARM, microcontrollers (MCU), SoC, CPU PIC, STM32, DsPic, MIPI CSI-2

EDUCATION

Master of Science in Computer Technology, 2018

Eastern Illinois University, Charleston IL, 2018

Bachelor of Science in Electronics, 2012

Islamabad, Pakistan, 2012

- Led a team of three to design a quadcopter microdrone (Final year project)