Ibrahim Raza

CTO at REVIVE MEDICAL TECHNOLOGIES Inc. | R&D Strategist | Technology Consultant | Transforming Concepts into Scalable Technologies
Islāmābād, Pakistan

Summary

As CTO at Revive Medical Technologies, I lead cross-functional teams focused on embedded systems, electronics design, and medical technology innovation. My core expertise lies in transformin ideas into reliable, scalable, and production-ready solutions through a strong foundation in systems engineering, R&D strategy, and lean product development.

I specialize in building self-sustaining engineering teams, setting up in-house development and production capabilities, and optimizing workflows for efficiency and compliance. With a focus on clarity, structure, and execution, I help bridge the gap between engineering complexity and business scalability.

EDUCATION

Institute of Space Technology, Pakistan
2016 - 2020

BE in Electrical Engineering
Relevant modules:
Programming, Power Systems, Control Systems, Embedded Systems.
Completed 8 semesters with **3.06 GPA.**

Beaconhouse School System, Pakistan
2014 - 2016

A'Levels – Pre Engineering
Grades:
B,B,C,C – Math, Physics, Chemistry & Computers

Beaconhouse School System, Pakistan
2011 - 2014

O'Levels – Pre Engineering
Grades:
1A*,5As, 2Bs

JOURNAL PUBLICATIONS

Inam, H., Najabat Ali, M., Raza I, & Dilawaiz, Qureshi Z. Development of Robust PEBAX-Based Angiographic Catheter: Design, and In-vitro study (Accepted. Materials, MDPI IF 3.7), 2022.

EXPERIENCE

Revive Medical Technologies Inc.
2023-Current

Revive Medical Technologies Inc.

2 years

Chief Technology Officer
November 2024 - Present (9 months)
Florida, United States

Head of Embedded Systems Division
July 2024 - November 2024 (5 months)
United States

Embedded Systems & Electronics Engineer
August 2023 - July 2024 (1 year)
Islāmābād, Pakistan

N-ovative Health Technologies (SoE), A subsidiary of NUST University, Islamabad

2020 - 2023

Job Title: PROCESS SPECIALIST (Cardiovascular Production Unit)

Benchmarks Achieved

- Successfully completed the designing and in-silico modelling of diagnostic angiographic catheter.
- Led a team for successfully completing the feasibility of production process flow of diagnostic angiographic catheter.
- Prepared the layout of production infrastructure
- Led a team for the fabrication of the prototype of diagnostic angiographic catheter.
- Successfully established the pilot scale production line of diagnostic angiographic catheter.
- Engaged and completed a third-party testing/validation of the processes involved in the production line of diagnostic angiographic catheter.
- Involved and completed calibrations of the production technology engaged in the production line of diagnostic angiographic catheter.
- Prepared the initial pilot scale LOTs/Batches of diagnostic angiographic catheter for non-clinical and clinical validation studies.
- Established the commercial scale production line of diagnostic angiographic catheter.
- Engaged in the preparation and implementation of QMS ISO 13485 certification.
- Successfully completed handling and management of third-party inspections with regards to QMS ISO 13485 certification.
- Led a team for the preparation of product dossiers and technical files for regulatory body licensing.

Medical Devices Development Center (MDDC) (CoE)
At NUST University, Islamabad

2019 - 2020

Job Title: Trainee Engineer

MDDC was established as a first Centre of Excellence in the country at NUST university in 2017 by the Federal Government of Pakistan under the special directive of Prime Minister Office of Pakistan in Partnership with one of the German Medical Device Industry to research and develop indigenous good quality medical devices in Pakistan.

I was recruited during Covid-19 pandemic based on my previous related performance to develop a prototype of Pakistan's first indigenous ventilator and Powered Air Purifying Respirator (PAPR).

Projects:

Powered Air Purifying Respirator (PAPR)

Developed PAPR with a team in the wake of covid-19 to provide health care professionals & frontline workers a cost-effective, portable, and active personal protective equipment in hazardous environments to safeguard them against contaminated air. It Provides easy donning and doffing, higher assigned protection factor than N95 and N99 masks which makes it perfect to use in contagious environments. Gained experience performing the following tasks in this project:

- CAD Designing & rendering using various CAD software.
- Mechanical Fabrication using 3D Printers & CNCs.
- Programming STM 32 using Cube IDE and Keil's uVision.
- Embedded programming and hardware integration.
- Optimizing power consumption to improve battery life
- Fabrication of head gear using polypropylene and polyester based on woven materials.

N-Saviour (ICU & non-ICU Ventilator)

Worked in the development of a cost effective and indigenous ventilator for ICU and Non-ICU based environments. Gained experience performing the following tasks:

- CAD Designing & rendering using various CAD software.
- Mechanical Fabrication using CNCs, Bending machines & Lathe machines.
- Embedded Systems programming and hardware integration.
- Controlling pneumatic valves and actuators using micro controller.
- Thermal management to keep the device cool while operating for long hours.
- Graphical user interface design and implementation with Nextion displays.
- Programming STM 32 32bit-Arm Cortex MCU.
- Implementing Real-Time Operating System (FreeRTOS) using STM 32.
- Programming STM 32 using Cube IDE & Keil's uVision (MDK).
- Controlling pneumatic proportional valves for accurate volume delivery.
- Software & hardware validations.
- Technical Documentation.

The product is now under trials and waiting to be approved from the relevant authorities to start a production line.

Kounter Intuitive Technologies (KIT), Islamabad, Pakistan

2017 - 2019

Job Title: Assistant Manager Tech (Part Time)

Engaged with KIT as an Asistant Manager (Tech) in the area of process automation for surgical/medical device & sports industries in Pakistan.

Projects:

AUTOSORT (Smart Sorting System for Football Patches)

An automated sorting machine was created for the football industry in Sialkot, Pakistan. It could detect different shapes of football patches/panels, sort them into their respective bins, and keep a record of the sorted and rejected items. It used a conveyor system, image processing, and electromechanical sorters, with a Raspberry Pi microprocessor and Python software, CAD Designing & rendering using various CAD software.

- Mechanical Fabrication using 3D Printers, CNCs & lathe machines.
- Pneumatic actuator control using raspberry Pi.
- Programming raspberry pi using python.
- Detecting panels with image processing using OpenCV.
- Embedded programming and hardware integration.
- Conveyer Belt design and fabrication.

This was the Final year project (FYP) for my bachelor's degree which was also sponsored by the company and was later vended to the industry to be used in the actual process.

AUTOCOUNT (Counting machine for medical forceps)

A counting machine was developed for one of the Sialkot based Surgical Industry where surgical forceps were under production. Surgical forceps are handheld hinged instrument used for grasping tissues and holding objects during surgery. The machine was designed and developed on a concept based on linear, continuous and sequential motion of forceps through a smart rail mounted on the conveyor belt on which the forceps slide through in a continuous and sequential motion and during this motion were efficiently counted by the laser sensor located in different places on the conveyor belt

- CAD Designing & rendering using various CAD software.
- Mechanical Fabrication using 3D Printers, CNCs & lathe machines.
- Welding metals using Stick welding
- Embedded programming and hardware integration.
- Programming PIC MCU to control actuators.
- Conveyer Belt design and fabrication.

It was a commercial project, and the machine was later sold to the industry which is still in use to automate the process.

Kounter Intuitive Technologies (KIT), Islamabad, Pakistan

2016 - 2017

Job Title: Internee

An industrial automation solution provider company-Worked on Paid Internship.

- Study and analyse the prospects of industrial automation and consumer behaviour in Pakistan.
- Chose appropriate products to launch.
- Design and write content for the company's social media pages and website.
- Working extensively on 3D printers to print machine parts.
- Programmed Arduino MCU.
- Designed and fabricated phototherapy machine for neonatal ICUs.
- Thermal management of LED Array used in phototherapy machine.
- Measured and Calculated irradiance & light LUX for the blue led lights.

Prosthetics & Implantology Lab, Biomedical Engineering Dept. NUST University, Islamabad, Pakistan

2014 - 2014

Job Title: Internee

A student research lab located in NUST School of Mechanical Engineering, Worked for 4 Months on Internship.

- Learned to use some basic engineering equipment.
- Training on how to use CO2 laser and CNC machine.
- Experianced professional work enviroment.
- Training on coating machines (spin, dip, ultra-sonic).
- Training on Electro spinning machine.
- Introduction to micro-controllers (Arduino, PIC, STM32)
- Introduction to programing (C++, Python)

CERTIFICATION

- Environmental Inspection of Processes in ISO Class 7 as per **ISO-14644** and **ISO-14698**
- Implementation of QMS EN **ISO 13485:2016**
- Catheter Production Cycle & Catheter Coating as per **ISO – 10555-1,2**
- Awareness of QMS **EN ISO 13485:2016**
- Quality Control Inspection of Catheter Manufacturing Processes
- Raw Material and Finished Goods Testing as per **2859-1-1999**
- **ISO 9001:2015** - Quality Management Systems Training Course
- **IEC 60601:2015** Medical electrical equipment — General requirements for basic safety and essential performance —Requirements for medical electrical equipment and medical electrical systems used in the home healthcare environment training course.
- **ISO 80601** Medical electrical equipment - Particular requirements for basic safety and essential performance of respiratory high-flow therapy equipment training course.

TECHNICAL SKILLS

Languages

C, C++, Python, MATLAB, Visual Basic, R, Java, SQL,HTML.

Engineering Design & Rendering Tools

Autodesk AUTOCAD Mechanical software, Autodesk INVENTOR Software, SOLIDWORKS, Autodesk Fusion 360,Blender.

Manufacturing Skills

CNC guided Laser cutting, laser-etching, laser engraving, Mechanical Engraving/ Milling, Fused Deposition Modelling (Rapid Prototyping), 3D Printing of Solid prototypes (Rapid prototyping), Spin Coating process.

Media Skills

Editing tools:
Davinci Resolve, Final Cut pro, Adobe After effects, Adobe Photoshop, Adobe Illustrator.

Video Editing skills:
Color Grading, Motion Tracking, Dynamic Transitions, Masking, Rotoscoping, Motion animations.