

Engr. Badar Hasnain Shehki

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PEC Registration No: COMP/026725

OBJECTIVE

Computer Engineering graduate with expertise in embedded systems, IoT, and firmware development. Passionate about creating smart solutions through hardware-software integration, mobile app development, and applying machine learning to real-world problems. Seeking opportunities to leverage technical skills and project management experience in innovative engineering roles.

EDUCATION

MS Computer Engineering

Sep 2025 – Present

National University of Technology (NUTECH), Islamabad

Specializing in Advanced Embedded Systems and AI Integration

BS Computer Engineering

Nov 2021 – May 2025

National University of Sciences and Technology (NUST), Islamabad

College of Electrical & Mechanical Engineering (EME)

PROFESSIONAL EXPERIENCE

Embedded Software Engineer

DPL Pvt Ltd, Islamabad

March 2026 – Present

- Developing firmware using Zephyr RTOS and ESP-IDF for embedded product lines
- Working on KILO Manager for pattern detection and signal processing
- Contributing to real-time system design and low-level hardware integration

Firmware Engineer

Quickgen Technologies, NSTP Islamabad

April 2025 – March 2026

- Developed custom firmware for ESP32, STM32, and NRF52840 microcontrollers across multiple product lines
- Created mobile applications using Flutter for device management and real-time monitoring
- Integrated Web APIs for cloud connectivity and remote device control
- Tested and debugged PCB prototypes for new product launches
- Calibrated environmental and motion sensors for accurate field deployment
- Authored comprehensive technical documentation and SOPs for production teams
- Applied project management methodologies using ClickUp and Slack for team coordination

Embedded Systems Intern

RiseTech, Rawalpindi

Jun 2024 – Aug 2024

- Learned PCB design fundamentals from schematic to fabrication
- Developed ESP-IDF firmware for ESP32 to aggregate slave data and upload to cloud
- Created web-based sign-in interface accessible at 192.168.0.1 for device configuration
- Worked on sensor integration and data processing for IoT applications

INDUSTRY PROJECTS

Scentix

Quickgen Technologies

NRF52840, BLE, Mobile App, Sensors

- Developed firmware for smart device that senses environmental conditions
- Implemented BLE connectivity for mobile app control and real-time monitoring
- Integrated multiple sensors for environmental data collection and processing

Front Parking Sensor

Quickgen Technologies

NRF52840, I2C, BLE, USB Communication

- Created advanced parking assistance system and obstacle detection
- Developed dual alert system: mobile vibration via BLE
- Optimized sensor fusion algorithms for accurate distance measurement

OptaTech

Quickgen Technologies

ESP32, A2DP, BLE, GPS, Audio Processing

- Designed smart device for golf players with GPS, microphone, and speaker integration
- Implemented BLE and A2DP for seamless mobile phone connectivity
- Enabled real-time location tracking and voice interaction for enhanced user experience

MASTERS RESEARCH & PROJECTS

Heart Disease Prediction Using Clinical Features

2025

Machine Learning, Python, Stacking Ensemble

- Developed comprehensive ML framework using Stacking Ensemble (RF, GBM, SVM) on 920-patient cohort
- Achieved 86.96% accuracy and 91.65% ROC-AUC addressing class imbalance and missing data
- Demonstrated robust multi-source prediction capability for clinical applications

Comparative Analysis of Optimization Methods

2025

Data Science, Python, Algorithm Analysis

- Conducted comparative analysis of optimization algorithms (Newton's, BFGS, L-BFGS)
- Focused on time and space complexity for large-scale machine learning applications
- Demonstrated L-BFGS's superior efficiency through theoretical analysis and benchmarks

FINAL YEAR PROJECT

Indoor Air Quality Monitoring System

Aug 2024 – May 2025

ESP32, Air Quality Sensors, ESP-NOW, WiFi, Azure Cloud

- Led team to design and develop real-time indoor air quality monitoring system
- Used ESP32 with MQ sensors and DHT22 for comprehensive environmental data collection
- Designed and fabricated custom compact battery-powered PCB
- Utilized ESP-NOW for efficient wireless communication between nodes and central gateway
- Integrated Azure Cloud for data storage, visualization, and global accessibility
- Managed project timeline and deliverables ensuring successful completion

HANDS-ON EXPERIENCE (CONTROLLERS)

- ESP32, STM32, NRF52840, NINA, Raspberry Pi, Compute Module, Arduino

HANDS-ON EXPERIENCE (PROTOCOLS)

- UART, SPI, I2C, I2S, ADC, BLE, WiFi, ESP-NOW, HFP, A2DP, MQTT

ADDITIONAL PROJECTS

IoT Based Smart Motor Switch

- Smart water management system for homes using ESP32 and ultrasonic sensors
- Real-time monitoring and control of water levels with cloud integration

RFID Attendance System

- Developed web application using PHP to store and manage RFID user data in MySQL
- Created automated attendance tracking with web-based interface

LEADERSHIP & VOLUNTEERING

General Secretary, EME Media Club

2024 – 2025

- Led technical wing organizing 5+ workshops on IoT and embedded systems
- Managed team of 15+ volunteers for event coordination
- Mentored 30+ students in project development and technical training

Director, COMPPEC

2023 – 2024

- Directed technical events with 200+ participants
- Coordinated industry partnerships and guest lectures

TECHNICAL SKILLS

- **Languages:** C/C++, Python, Java, HTML/CSS, R
- **Embedded Tools:** ESP-IDF, Arduino IDE, Segger Embedded Studio, MATLAB
- **Development Tools:** VS Code, PyCharm, IntelliJ, Eclipse, Git/GitHub
- **App Development:** Flutter (Mobile Apps), PHP (Web Backend)
- **ML Libraries:** pandas, NumPy, Matplotlib, scikit-learn
- **Project Management:** ClickUp, Slack
- **Cloud Platforms:** Azure Cloud, AWS IoT

COURSES & CERTIFICATIONS

- Advanced Programming in C++ – Cisco Networking Academy
- IoT Application Development with ESP32 – Udemy
- English for Career Development – MOOC