

Md. Julhas Hossain

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Summary

Embedded systems and IoT engineer with hands-on experience in microcontroller programming (ESP32, STM32, AVR), C/C++, Python, and real-time operating systems (FreeRTOS). Skilled in LoRaWAN, MQTT, SPI, I2C, and full-stack IoT development. Recently completed a Master's in IoT and now seeking embedded software engineering roles to apply technical expertise and contribute to impactful projects.

Education

Macquarie University

Masters of Information Technology in Internet of Things (MS IT in IoT)
Sydney, NSW, Australia

July 2023 – June 2025

North South University

B.Sc. in Computer Science and Engineering (CSE)
Major: Artificial Intelligence
Dhaka, Bangladesh

January 2015 – September 2019

Skills

- **Hardware:** Microcontrollers (AVR, PIC, ESP8266/32, STM32), Arduino, Raspberry Pi, Circuit Prototyping & Design, Board Bring-Up, Sensor Interfacing.
- **Programming Languages:** C, C++, Python.
- **Communication Protocols:** Serial (SPI, I2C, UART, Ethernet), Wireless (LoRaWan, Bluetooth, ZigBee), MQTT, HTTP/HTTPS.
- **Operating Systems:** Windows, Linux, FreeRTOS.
- **Tools & Others:** Version Control (Git), Additive Manufacturing (3D printing).

Work Experience

Dryad Networks

Intern

November 2024 – Jun 2025

- Developed a customizable LoRaWAN-based IoT node using the TTGO ESP32, with features such as- dynamic sensor selection, threshold configuration, and calibration through a responsive web interface.
- Planned and optimized LoRaWAN networks for deploying bushfire detection sensors.
- Deployed, tested, and maintained IoT sensors to ensure optimal network performance.

Meghna Group of Industries (MGI)

Senior IoT Engineer

March 2022 – May 2023

- Solved various business needs with IoT and software systems.
- Developed firmware required for projects.
- **Notable Projects:**
 - IoT and RFID based LPG Cylinder Tracking and Refueling Detection for 2.7 Million LPG Cylinders.
 - IoT based vehicle tracking with fuel pilferage detection system.

Creative IT Institute

IoT Developer

October 2019 – March 2022

- Conducted research and development on embedded systems and IoT.
- Taught embedded systems and IoT to over 200 students.
- **Notable Projects:**
 - Biometric Attendance System (IoT based).
 - Classroom Scheduler Display System (IoT based).

- Digital Time Switch with Energy Cost Prediction (IoT Based).
- Server Temperature Monitoring System (IoT Based).
- Smart home system (IoT Based).
- Autonomous Indoor Delivery Robot.
- Educational robot for Kids.

Projects

- **Customizable LoRaWAN IoT Node:** TTGO ESP32-based node with web UI for sensor selection, threshold configuration, and calibration; developed during internship at Dryad Networks.
- **Green Roof Monitoring System:** IoT system using ESP32, AWS, FreeRTOS, and MQTT for environmental data tracking.
- **Street Banner Controller:** Energy prediction with ESP32, AWS, and PCA-based ML.
- **Automated Food Delivery Robot:** ROS-enabled robot with ESP32, Lidar, and Android Studio.
- **EduBot:** Educational robot for kids using ATmega328P and proximity sensors.
- **Smart Egg Incubator:** Automated incubator using Arduino Uno and temperature sensors.
- **IoT Delivery Drone (Peon):** Raspberry Pi-powered drone with GSM and Lidar.
- **AI Vehicle Movement Detection:** Neural network on Arduino Nano BLE.
- **Health Monitoring System:** IoT and AI-based e-health solution using ANN/DNN.
- **Biometric Attendance System:** STM32-based system with RFID and GSM.
- **Swarm Patient Assistant Robots:** IoT robots with RFID and SLAM.
- **Lost and Found BD:** Web and mobile platform using HTML, PHP, and MySQL.

Publications

Book Chapters

- Nelay, A. A., Oshman, M. S., Islam, M., Hossain, M. J., & Zahir, Z. B. "Content-based health recommender system for ICU patients." Springer. 2019.

Conferences

- Hossain, M. J., Bari, M. A., Khan, M. M. "Web and Mobile Application Based Missing Query Platform (Lost and Found BD)" (IEEE IEMCON 2021).
- Bari, M. A., Hossain, M. J., Khan, M. M. "Development of Smart Egg Incubator" (IEEE UEMCON 2021).
- Hossain, M. J., Bari, M. A., Khan, M. M. "Development of an IoT Based Health Monitoring System for e-Health" (CCWC 2022).

Awards and Achievements

- Fund of \$2000 for advanced battle robot development, NSU (May 2017).
- Fund of \$3000 for MarsRover development, NSU (August 2018).
- Aggregated competition prize money of \$3000 (2016-2019).
- Champion: Robo Combat (Esho Robot Banai), Robo Riot, Megabots Clash.
- 1st Runner-Up: Innovation Challenge Season 6 (Capstone Project).
- 6th Place: Indian Rover Challenge (IRC).
- Multiple Runner-Up positions in robotics competitions and IEEE Hackathon.

Extra-Curricular & Other Activities

- Prepared NTVQF Course Curriculum on Cloud Computing at BTEB (2021).
- Coordinator of Robotics, NSU ACM Student Chapter (2017-2019).
- Taught Programming and Robotics to over 350 students via e-learning courses (Arduino Programming, Let's Make Robots).

References

Available upon request.