SAKIUL MOWLA RAMIM

Senior Embedded Systems & IoT Engineer

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PROFESSIONAL SUMMARY

Performance-driven **Senior IoT Engineer** with over 4 years of experience architecting end-to-end industrial solutions. Expert in bridging the gap between industrial edge hardware (ESP32, Raspberry Pi) and scalable cloud infrastructure. Proven track record of leading product life-cycles from prototype to mass manufacturing for the Aquaculture, Utility, and Energy sectors. Adept at implementing robust industrial protocols (Modbus, BACnet), optimizing Linux-based gateways with Node-RED, and developing scalable Python backends for real-time telemetry.

TECHNICAL SKILLS

- **Microcontrollers:** ESP32 (S2/S3/C3), STM32, Arduino, Raspberry Pi, Orange Pi.
- **Firmware & OS:** C/C++, FreeRTOS, Python (Scripting/Backend), MicroPython, Linux (Ubuntu/Debian), Bash Scripting, Cronjobs, Node-RED.
- **Connectivity & Protocols:** MQTT (Mosquitto), Modbus (RTU/TCP), BACnet, RS-485, BLE, WiFi, LoRaWAN, GSM/GPRS, I2S, I2C, ESP-NOW.
- **Hardware Design:** PCB Design (EasyEDA), Circuit Analysis, Solar BMS.
- **Cloud & DevOps:** InfluxDB, PostgreSQL, Grafana, SSH Remote Management, Docker.
- **Mobile & Tools:** MIT App Inventor (MVP Apps), Arduino IDE, VS Code (PlatformIO), Git.

PROFESSIONAL EXPERIENCE

NEXUS FISH NETWORK | *Remote / Hybrid* **Lead R&D Engineer (IoT & Hardware)** | *Feb 2025 – Present*
Spearheading the engineering of "SmartFishAuto™," Bangladesh's first AI-driven commercial aquaculture ecosystem.

- **Product Architecture:** Designed the full hardware ecosystem: **Sensor Nodes (SEN)**, **Automation Units (SW)**, and **Robotic Defense Systems (LR)**.
- **Industrial PCB Design:** Engineered custom 2-Layer PCBs with **Galvanic Isolation** and **Solar BMS** to ensure 99.9% uptime in harsh saltwater environments.
- **Firmware Engineering:** Developed non-blocking C++ firmware using **FreeRTOS** on ESP32, enabling concurrent sensor polling (8+ parameters).
- **Impact:** Implemented "Oxygen-Demand Logic," reducing client energy consumption by **~25%**.

ENERZYZ | *Remote / Contract* **Senior Internet of Things Engineer** | *Nov 2025 – Jan 2026*

- **Industrial Architecture:** Led the end-to-end architecture of scalable IIoT ecosystems, bridging industrial edge hardware with cloud infrastructure.

- **Protocol Integration:** Expertly implemented **Modbus (RTU/TCP)** and **BACnet** to interface ESP32 and Orange Pi gateways with diverse industrial controllers and legacy systems.
- **Data Pipeline:** Developed efficient **Python backends** utilizing MQTT for real-time telemetry, managing **InfluxDB** for high-volume time-series data and **PostgreSQL** for relational storage.
- **DevOps & Security:** Ensured robust network integrity via WiFi/Ethernet and utilized **SSH** and **Cronjobs** for secure, remote device management and automated maintenance.

PADMA SMART TECHNOLOGY LTD | *Dhaka, Bangladesh* **IoT Engineer** | *Nov 2023 – Jan 2025*

- **Smart Water Metering (Govt. Project):** Led the integration of **LoRaWAN gateways** and end-devices for the Chattogram WASA project, enabling long-range remote billing.
- **System Optimization:** Refactored legacy codebases to improve battery life of field sensors by 40% through deep-sleep optimization.
- **Infrastructure:** Managed Linux VPS environments to host secure MQTT brokers for large-scale device deployment.

GRIT TECHNOLOGIES LIMITED | *Dhaka, Bangladesh* **Embedded Systems Engineer** | *Apr 2023 – Oct 2023*

- **Predictive Maintenance (BAT):** Deployed vibration and temperature monitoring sensors for **British American Tobacco (BAT)** to predict motor failures before they occurred.
- **Industrial Reliability:** Engineered sensor nodes to withstand high-interference industrial environments using RS-485.

IOTWITHRAMIM (FREELANCE) | *International* **Freelance IoT Developer** | *Dec 2021 – Present*

- **Smart Sewing Machine Monitor (RMG Industry):** Designed an OEE tracking system for the Garment industry using ESP32 and **I2S Audio feedback**.
  - *Feature:* Real-time efficiency display on TFT Touchscreens with audio alerts.
  - *Resilience:* Implemented local SD Card logging to prevent data loss.
- **Disaster Management:** Designed a "Heavy Rain & Landslide Warning System" for the **Ukhiya Rohingya Camp** (UN/NGO project).
- **MVP Development:** Rapidly prototyped mobile apps using **MIT App Inventor** for client demonstrations and field testing.

EDUCATION

B.Sc. in Computer Science & Engineering *University of Creative Technology, Chittagong (UCTC) | 2022*

- **CGPA:** 3.55 / 4.00
- **Thesis:** Smart Agriculture Farm Management System using IoT and Image Processing
- **Industrial Attachment:** Real-time Water Logging Monitoring and Alert with Computer Vision and IoT

Diploma in Computer Science & Engineering *Shyamoli Ideal Polytechnic Institute, Chittagong | 2016*

CERTIFICATIONS & TRAINING

- **Industrial IoT Attachment** – bdtask Limited (6 Months)
- **Web Application Development (ASP.NET/C#)** – Beacon IT
- **IoT & Embedded Systems Training** – ICT Division (LICT)

NOTABLE PROJECTS

Full case studies available at: sites.google.com/view/ramim-iot

- **Smart Aquaculture Ecosystem (Full Case Study)**

    - *Role:* Lead Architect. A unified IIoT ecosystem integrating Sensing, Automation, and Robotics.

- **Industrial Multi-Parameter Water Monitor (NFN-SEN)**

    - *Tech:* ESP32, RS485 Sensors, Solar BMS, Galvanic Isolation.
    - *Impact:* Replaced manual testing with 24/7 telemetry for DO, pH, Turbidity, and Ammonia.

- **Smart Automation Control Unit (NFN-SW)**

    - *Tech:* High-Voltage AC Control, Snubber Circuits, AI Logic.
    - *Impact:* Reduced energy costs by 25% via "Oxygen-Demand" aeration control.

- **Autonomous Laser Predator Defense (NFN-LR)**

    - *Tech:* Robotics, Stepper Motors, Randomized Algorithms.
    - *Impact:* Humane, autonomous bird deterrence for large-scale fish farms.

- **Smart Industrial Production Monitor (IIoT)**

    - *Tech:* ESP32, TFT Touchscreen, I2S Audio, SD Logging.
    - *Impact:* Real-time OEE tracking with audio feedback for Garment Industry (RMG).

- **Predictive Maintenance for British American Tobacco**

    - *Tech:* Industrial Vibration/Temp Sensors, Modbus.
    - *Impact:* Predictive failure analysis for high-value industrial motors.

- **Landslide Warning System (UN/Rohingya Camp)**

    - *Tech:* Remote Telemetry, Soil Moisture Analysis.
    - *Impact:* Early warning system for heavy rain and landslides in vulnerable refugee zones.

- **Smart Water Metering (WASA Project):** Long-range billing system using LoRaWAN Gateways and End-Devices.

- **Real-Time Multi-Sensor Vehicle Monitoring:** Accident detection, fire/fuel leakage alerts, and location-based emergency notifications.

- **Smart Agriculture Farm Management (Thesis)**

    - *Tech:* IoT, Image Processing, Python. Automated irrigation and crop disease detection.

- **Real-time Water Logging Monitoring (Industrial Attachment)**

    - *Tech:* Computer Vision, IoT. City-wide water level detection using street cameras.

- **Cow Health Monitoring System (OTA Enabled)**

- *Tech:* Wearable IoT, OTA Updates. Real-time livestock tracking and vital signs monitoring.

- **IoT Security Bot:** Autonomous ESP32-CAM robot with Telegram integration for intruder alerts.

- **Smart Traffic & Street Light Management:** Energy-efficient adaptive lighting based on traffic density.

- **Remote Patient Health Monitoring:** Real-time telemetry of vital signs (ECG, SpO2, Temp).

- **Indoor Fire Fighting System:** Automated suppression system linked to Arduino IoT Cloud.

- **Environmental Gas Neutralizer:** Toxic gas detection with automated ventilation triggers.

- **Real-Time Flood Alert System:** Ultrasonic water level monitoring for flood-prone zones.