Siratul Islam

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Education

Shahjalal University of Science and Technology **Aug. 2023 – Aug 2027**
Bachelor of Science (Hons) in Physics *Sylhet, Bangladesh*

Experience

Shahjalal University of Science and Technology **Mar 2025 – Present**
Undergraduate Research Assistant - Department of Electrical and Electronic Engineering *Sylhet, Bangladesh*

- Developing smart relay control systems for government cost optimization in collaboration with EE faculty
- Technologies used: STM32, ESP32, embedded C, MQTT, power electronics, smart relays, IoT protocols, IoT servers, data acquisition systems

Open Source Contributor **Jun 2025 – Present**
Zephyr RTOS Project *Remote*

- Official contributor to Zephyr RTOS with board support for WeAct STM32F446RET6 (PR #91886)
- Implemented device tree configurations, GPIO mappings, and peripheral initialization for ARM Cortex-M4
- Earned Linux Foundation Zephyr contributor badge, enabling global developer adoption of WeAct STM32F446RE
- Technologies used: Zephyr RTOS, Device Tree, STM32F446, ARM Cortex-M4, embedded C, Git

Projects

Zephyr RTOS Support for WeAct STM32F446RET6 | *C, Zephyr RTOS* **live link**

- Added official board support for WeAct STM32F446 in Zephyr RTOS (PR #91886), now included in the upstream project.
- Implemented complete board bring-up: device tree, KConfig, C sources, pinmux, and board documentation.
- Enabled 1000+ developers to use this board after merging into Zephyr

STM32 BME280 HAL Driver | *C, STM32, HAL, BME280* **source code**

- Developed a custom HAL driver for the Bosch BME280 environmental sensor using I2C.
- Provided accurate temperature, humidity, and pressure readings with calibration and error handling.
- Optimized for STM32F446 using the STM32Cube HAL framework and tested with real hardware.

ESP32-S3 Weather Station | *C++, ESP32-S3, MQTT* **source code**

- Designed a multi-sensor environmental station collecting temperature, humidity, pressure, light, and magnetic heading.
- Displayed readings on an SSD1306 OLED and streamed live data over MQTT via Wi-Fi connectivity.

ESP32-S3 Biometric Attendance System | *C++, ESP32-S3, BLE* **source code**

- Built a portable attendance tracker using fingerprint sensor and NeoPixel LEDs.
- Stored attendance data offline via SPIFFS and synced with Google Sheets over Wi-Fi; BLE interface for control and feedback.

ESP32 Radar Smart Switch | *C, ESP32, ESP-IDF, RD-03D* **source code**

- Implemented a presence-detection smart switch using RD-03D 24 GHz mmWave radar and ESP32.
- Automated appliance control via relay signals, featuring adjustable detection sensitivity and low-power logic.
- Part of a research to save electricity costs in government offices

Technical Skills

Frameworks & Programming: STM32 HAL, ESP-IDF, Embassy-rs, Embedded Linux, Embedded C, C++, Rust
Microcontrollers & Processors: STM32H723VIT6, STM32H523RET6, STM32F446RET6, STM32F411CE, ESP32-S3, nRF52840, Milk-V, Raspberry Pi 5, ARM Cortex-A7, ARM Cortex-M4, RISC-V
Real-Time Operating Systems: Zephyr RTOS (official contributor), FreeRTOS, CMSIS-RTOS
Hardware Protocols: GPIO, I2C, SPI, UART, ADC, PWM, interrupt handling
Communication Protocols: MQTT, Wi-Fi, BLE, LoRa, IoT protocols
Development Tools: STM32CubeIDE, ESP-IDF, PlatformIO, OpenOCD, GDB, KiCAD, Git
Specialized Technologies: HAL drivers, Device Tree, low power systems, power electronics, smart relays, data acquisition systems

Additional Experience and Awards

ZephyrRTOS contributor badge: Earned Linux Foundation Zephyr RTOS contributor badge by becoming a contributor
University Physics Competition: Won the Bronze Medal in the University Physics Competition 2024
Pre-University Achievements: 3rd, Notre Dame Science Fest; 1st Inter Cantonment IT Fest, 1st NCPSC IT Fest