

Siratul Islam

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Shahjalal University of Science and Technology, Sylhet - 3114, Sylhet, Bangladesh

RESEARCH INTERESTS

Embedded Systems, IoT & Smart Grid Technologies, Real-Time Operating Systems, Embedded Linux, Power Electronics, Educational Technology, Human-Computer Interaction, RISC-V, Applied Mathematics & Modeling

EDUCATION

Shahjalal University of Science and Technology

Sylhet, Bangladesh

Bachelor of Science (Hons) in Physics

Aug. 2023 – Aug 2027

- Relevant Coursework: Basic & Digital Electronics, C Language, Electricity & Magnetism, Computational Physics
- Academic Achievement: Bronze Medal, University Physics Competition 2024

RESEARCH EXPERIENCE

Shahjalal University of Science and Technology

Sylhet, Bangladesh

Undergraduate Research Assistant - Department of Electrical and Electronic Engineering

Mar 2025 – Present

- Developing smart relay control systems for government cost optimization in collaboration with EE faculty
- Research focuses on IoT-enabled power management systems using STM32 and ESP32 microcontrollers
- Implementing MQTT-based data acquisition systems for real-time monitoring and control
- Technologies: STM32, ESP32, embedded C, MQTT, power electronics, smart relays, IoT protocols

PUBLICATIONS & PRESENTATIONS

Air Evacuation Time for Holes of Variable Diameters in a Space Station

2024

ResearchGate Publication - University Physics Competition 2024

Team 750 Problem A

- Developed comprehensive mathematical model for air evacuation dynamics in space station environment
- Applied fluid dynamics principles and differential equations to analyze variable hole diameter effects
- Won Bronze medal for successful calculation and presentation

Zephyr RTOS Documentation

2025

Zephyr RTOS board documentation and implementation guides

WeAct STM32F446

PROFESSIONAL EXPERIENCE

Hackules Inc.

Remote

Software Engineer

Jun. 2024 – Jun. 2025

- Led full-stack development for educational platforms including Teachers Today (Next.js + Express.js)
- Developed Opedemy learning platform with 200+ API integrations and optimized SSR for 50% faster load times
- Conducted technical interviews for engineering positions
- Technologies: SvelteKit, Next.js, Django, TypeScript, MongoDB, SMS/Email APIs

Software Engineer, Intern

Feb. 2024 – Jun. 2024

- Built AI-powered marketing analytics tool with Facebook Graph API integration
- Developed Flutter CRM mobile application serving 1000+ active users
- Technologies: SvelteKit, Flutter, Facebook Graph API, LinkedIn API, Firebase

Copernicus Astronomical Memorial of SUST

Sylhet, Bangladesh

IT Secretary

Nov. 2024 – Present

- Built the new official website from ground up using modern technologies like NextJS + Typescript
- Played the role of the IT coordinator and acted as a member of the Scientific Organizing Committee of CAM-SUST Summer School on Astronomy 2025
- Organized in-person recruitment events and coordinated technical workshops

Assistant IT Secretary

Apr. 2024 – Oct. 2024

- Managed and maintained the old Wordpress website, configuring packages for various functionalities
- Developed educational content and Python programming tutorials for 200+ students
- Handled content publishing on the website including blogs, and magazine

Zephyr RTOS Project

Official Contributor

Remote

Jun 2025 – Present

- 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
- Contribution impact: 1000+ developers can now use WeAct STM32F446RE with Zephyr RTOS

SELECTED PROJECTS

Embedded Systems & IoT Projects

STM32 Zephyr RTOS Board Support | *C, STM32, Zephyr RTOS, Device Tree, ARM Cortex-M4*

[live link](#)

- Official board support for WeAct STM32F446 in Zephyr RTOS, now part of upstream project
- Complete board bring-up: device tree, KConfig, C sources, pinmux, and documentation
- Official Linux Foundation contributor badge earned
- Hardware: STM32F446

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

[source code](#)

- Custom HAL driver implementation for Bosch BME280 environmental sensor
- Provides temperature, humidity, and pressure readings with I2C communication
- Optimized for STM32 microcontrollers with error handling and calibration
- Hardware: STM32, BME280 sensor, I2C interface

ESP32-S3 Weather Station | *C++, ESP32-S3, MQTT, Raspberry Pi 5*

[source code](#)

- Comprehensive weather monitoring system with multi-sensor environmental data collection
- Features OLED display, MQTT connectivity for real-time data streaming
- Measures temperature, humidity, pressure, light intensity, and magnetic field with compass heading
- Hardware: BME280, BH1750, QMC5883L, SSD1306 OLED, WiFi connectivity

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

[source code](#)

- Portable biometric attendance tracking solution using fingerprint recognition
- Features offline storage with SPIFFS, Google Sheets integration for data sync
- BLE control interface and RGB LED feedback for secure attendance management
- Hardware: AS608 Fingerprint sensor, NeoPixel LEDs, WiFi/BLE connectivity

ESP32 Radar Smart Switch | *C, ESP32, ESP-IDF, Google Sheets API*

[source code](#)

- Smart presence-detection switch built with ESP-IDF and RD-03D 24GHz mmWave radar
- Detects human presence to automate appliances using relay control
- Synchronizes data with Google Sheets using API
- Hardware: RD-03D radar sensor, relay modules, ESP32 DevKit

ESP-IDF RD-03D Component | *C, ESP-IDF, UART, Component*

[live link](#)

- ESP-IDF component for AI-Thinker RD-03D mmWave radar sensor
- Published on ESP Component Registry with comprehensive API for target detection and tracking
- Features intelligent retention filtering, position descriptions, and real-time coordinate tracking
- Hardware: AI-Thinker RD-03D radar, UART communication, ESP32 platform

Educational Technology & Web Platforms

Opedemy Learning Platform | *SvelteKit, TypeScript, API Integration*

[live link](#)

- Led frontend development for educational platform with 200+ API integrations (auth, payments)
- Optimized SSR/static rendering, reducing load times by 50% and improving SEO performance

Teachers Today Recruitment Platform | *Next.js, Express.js, MongoDB*

[live link](#)

- Full-stack teacher recruitment platform with advanced filtering and matching algorithms
- Role-based dashboards for tutors, students, and administrators

HIAR Research Collaboration Platform | *SvelteKit, TypeScript, API Integration*

[live link](#)

- Led SvelteKit-based frontend for academic research platform
- Integrated 100+ API endpoints with real-time collaboration
- Reduced design debt by 30% using shadcn/ui components

TECHNICAL SKILLS

Embedded Systems: STM32 (H723VIT6, H523RET6, F446RET6, F411CE), ESP32-S3, nRF52840, ARM Cortex-M4/A7, RISC-V

RTOS & Frameworks: Zephyr RTOS (official contributor), FreeRTOS, STM32 HAL, ESP-IDF, Embassy-rs, Embedded Linux

Programming Languages: Embedded C/C++, Rust, TypeScript, Python, C#, SQL, Dart

Web Technologies: SvelteKit, Next.js, .NET, Flutter, Django, Express.js

Hardware Protocols: GPIO, I2C, SPI, UART, ADC, PWM, MQTT, Wi-Fi, BLE, LoRa

Development Tools: STM32CubeIDE, PlatformIO, KiCAD, Docker, Git, Linux, GDB, OpenOCD

CERTIFICATIONS & AWARDS

Certifications: Harvard CS50x, HackerRank certifications in Angular, C#, JavaScript, Java, Python

Open Source Recognition: Linux Foundation Zephyr RTOS Contributor Badge

Academic Awards: Bronze Medal, University Physics Competition 2024

Mathematical Modeling: Published researcher in applied mathematics and space engineering modeling

Pre-University Achievements: 1st place Inter Cantonment IT Fest, 1st NCPSC IT Fest, 3rd Notre Dame Science Fest

TEACHING & MENTORSHIP EXPERIENCE

Student Organization Leadership: IT Secretary, Copernicus Astronomical Memorial (200+ members)

Technical Mentorship: Interviewed and mentored software engineering candidates at Hackules Inc.

Educational Content Creation: Developed Python programming tutorials for CAM-SUST

Workshop Organization: IT coordinator and Scientific Organizing Committee member of CAM-SUST Summer School on Astronomy 2025