

# Brahmajit Das

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## Work Experience

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### • Google Summer of Code

Student Developer at Gentoo Linux Foundation

Remote

June 2022 — Present

- Port GNOME Desktop for musl libc
- Fix other musl related bugs

### • Lifespark Tech, IIT Bombay

Firmware Developer

Remote

September 2021 — Present

- Porting firmware across MCU models
- Implementation of communication protocol (WiFi, BLE, MQTT)
- Interacting with cloud backends via REST API (AWS S3 buckets)
- Write drivers for SPI and I2C devices
- Laying out CI pipeline for remote deployment and over the air updates
- Ensuring firmware security using Secure Boot and encrypted flash storage

### • Sironaaz Lab

Embedded Systems Engineer, Intern

Calcutta, West Bengal

May — September, 2021

- Ported existing system to different processor architecture.
- Refactor existing code and implement better communication protocol (SPI and I2C).
- Integrate web UI instance with hardware.

## Education

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### • Gurudas College

B.Sc. with Honors – Computer Science; CGPA: 7.493

Kolkata, India

2018 – 2021

Courses: Operating Systems, Data Structures, Algorithms Design and Analysis, Databases, Networking, Machine Learning

## Core Technical Skills

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- **Programming Languages:** C, C++, L<sup>A</sup>T<sub>E</sub>X, Python, shell scripting, SQL
- **Tools:** Git, GitLab, Docker, ssh, PlatformIO, FreeRTOS, ESP-IDF
- **Platforms:** Linux, BSDs, Windows, RaspberryPi
- **μ-Processors:** ARM STM32, Atmega328p, ESP32

## Personal Projects

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- **Driver for MPU6050** ESP-IDF driver for MPU6050 and similar IMU units, over I2C protocol [Link to project](#).
- **FreeRTOS on ARM STM32:** Ported the FreeRTOS to ARM STM32F103 (Cortex M3), known as **Bluepill**. Then used to generate a PWM with Timer 2 as test case. [Link to project](#)
- **My Compiler Writing Journey:** Writing a C compiler from scratch, using the **acwj** as the base starting point. [Link to project](#).

## Open Source Contributions

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- **Gitlab Shell** Changed the default logging format to **JSON** from plain text, was part of the **14.1 release**. GitLab Shell handles git **SSH sessions for GitLab** and modifies the list of authorized keys. [Merge Request 467](#).
- **DevOps Guide** Contributed to **several chapters** of this popular DevOps guide (**3.8k stars**), including chapters for Virtual Machines, Linux commands and tools for DevOps and Firewall. [Link to all my contributions](#).

## Achievements

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- **HacktoberFest 2020:** Among 70,000 participants, awarded goodies and cash prize.
- **College Seminar:** First position in college seminar. Using Arduino and HC SR04 module, created a sonar with GUI feedback.