

# Ignatius Ali Alamsyah Djaynurdin

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## Education

### Georgia Institute of Technology | Atlanta, GA

Candidate for Bachelor of Science in Computer Engineering, Dean's List

August 2022 – Present

Expected Graduation: Dec 2024

### Bellevue College | Bellevue, WA

Transfer with 62 Credit Hours, Graduated with High Distinction

September 2020 – June 2022

## Skills

**Programming:** C, C++, Embedded C, Java, Verilog, VHDL, Python, PHP, R, MIPS Assembly, RISC-V Assembly

**Software:** KiCad, Cadence, ModelSim, Quartus Pro, STM32, Arduino, Keil Studio, Microsoft 365, Adobe Creative Suite

**Languages:** English (fluent), Indonesian (native)

## Experience

### Polytron Indonesia | Kudus, Indonesia

May 2023 – July 2023

#### Research and Development Embedded Software Engineer Intern

- Developed and optimized algorithms for determining the State of Charge (SoC) and State of Health (SoH) of battery packs using STM32 microcontrollers.
- Programmed and tuned a Kalman filter on STM32 microcontroller for precise battery performance calculations in embedded C.
- Modified PCB to enable UART communication for serial monitor interaction to start data acquisition to gather charging and discharging characteristics for creating usable datasets.

## Projects

### BMS BQ76920 Library for STM32 MCU | Internship

- STM32 MCU library for BMS enabling voltage/current monitoring, protection, and cell balancing for Lithium Batteries.
- Implemented State of Charge (SOC) and State of Health (SOH) estimation using Kalman filters for precise battery status assessment.

### Shunt Current Sensor PCB Design | GT Solar Racing

- Designed and prototyped PCB for integrating the Shunt current sensor into the Battery Monitoring System (BMS) and MCU.
- Finished training and received PCB Fabrication certificate from Texas Instruments Maker Space (The Hive) for ProtoLaser and ProtoMat machine.

### RPG Game NXP LPC1768 MCU | Embedded Project

- Designed and developed an RPG (Role-Playing Game) utilizing microcontrollers and breadboard.
- Implemented an advanced data structure, Hashmap, and coded the project in the C using Keil Studio.

### Connected Components Labelling | Assembly Project

- Implemented Two-Pass Algorithm in C and MIPS Assembly to label connected components in binary images.
- The C version used integers for labels and grouped connected pixels, while the MIPS Assembly version displayed components in different colors.

## Relevant Coursework

**VLSI and Advanced Digital Design:** Understanding of CMOS technology and fabrication, proficient in VHDL and FPGA use, with hands-on experience in breadboarding. Worked with Cadence Virtuoso to layout full-adder.

**Data Structures and Algorithms:** Work with advanced data structures used in software development and become familiar with sorting algorithms, pattern matching, and graphs.

**Embedded System Design:** Embedded OS; device drivers and applications for embedded systems. Design and implement hardware and software interfaces to connect standard I/O devices to a computer.

**Intro to High-Level Language and Assembly Programming:** Hardware development for microcontrollers using design principles for sequential and procedural programming in C and MIPS assembly language.

**High-Performance Computer Architecture:** Understanding fundamental principles of the major components of a processor, memory hierarchy, I/O subsystem, and basic operating system constructs that utilize them.

## Organization

### Georgia Tech Solar Racing | Batteries and BMS Team Member

September 2022 – May 2023

- Utilized Riedon Shunt current sensor for the battery pack.
- Designed and implemented various system circuit boards for BMS, current sensor, and regulator using KiCad.