

# RAJAT RAJ

B.E. in Electronics and Communication Engineering

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## EDUCATION

### B.E. in Electronics and Communication RV College of Engineering, Bangalore

08/2019 - Present

CGPA: 9.10/10

- Digital Signal Processing and Machine Learning, Analysis & Design of Digital Circuits, Analog Microelectronic Circuits, Programming in C, Advanced Digital System Design using Verilog HDL, Signals and Systems, Embedded System Design, Microprocessor & Microcontroller, Analog Integrated Circuits Design, Digital VLSI, Low Power VLSI, CAD Tools for VLSI

## EXPERIENCE

### Safety Circuits Engineer

Team Chimera (Formula SAE team), R V College of Engineering

08/2019 - Present

Bangalore

- Worked on component-level designing, prototyping, and testing of circuits like brake system plausibility device and insulation monitoring device that enhance driver safety in electric cars.
- Participated in the 2020 and 2021 editions of Formula Bharat, a national level engineering design competition held at Coimbatore, India.

### Project Intern

Proxelera [🔗](#)

04/2022 - 08/2022

Bangalore

- Worked on Implementing high-speed data transfer using AXI protocol.
- Working on APB, AXI protocols and its interfacing with SOC using standard ARM-based interface systems for image processing.
- Performed Comparative study of Sigmoid and ReLU activation function for accuracy of the network and the total resource utilization and clock performance.

### Research Intern

CISCO-RVCE CoE in IOT

07/2020 - 08/2020

Bangalore

- Worked on a project "IoT based smart agricultural Monitoring System".
- Worked on sensors for collecting and analyzing field data such as temperature, humidity, soil moisture and rain detector.
- This system is completely automated and there is no need for human intervention. Also, the sensor readings are transmitted to a Thing speak channel to generate graphs for analysis.

## SKILLS

Languages: C/C++, Python, LaTeX, HTML, CSS, HDL(Verilog)

Software Packages: MATLAB, Autodesk Eagle, Proteus, Vivado, Cadence Virtuoso, Labview, LT Spice

## PROJECTS

### Approximate Multiplier using 4:2 Compressors

(06/2021 - 09/2021) [🔗](#)

- The aim of this project is to design and simulate a 16-bit approximate multiplier using 4:2 Compressors to deliver high performance and execution efficiency at low power consumption.
- The tradeoff was a reduction in accuracy, which does not necessarily affect the normal operation of machine learning and multimedia applications.

### High-Speed Data Transfer using AXI Protocol for Image Detection (04/2022 - 08/2022)

- The objective is to develop an IP core block for image detection with limited resources and low latency for recognizing digits using CNN architecture.
- AXI protocol is developed to achieve high-speed data transfer.

### ECG Classification Using NLMS and KNN

(07/2021 - 09/2022) [🔗](#)

- In this project ECG signal pre-processing and KNN based beat classification is performed to categorize the signal into normal and abnormal subjects.
- LMS based adaptive filters are used in ECG signal pre- processing for the removal of noise. Compressing the processed denoised signal to decrease the time delay by selective feature selection.

### Bidirectional Counter for Power Automation

(10/2020 - 01/2021) [🔗](#)

- The aim of this project is to make a model based on a microcontroller to count the number of people entering a mall then enable the required number of motors or engines based on the number of people inside the mall using Proteus Simulation Software.
- The project is a real-life model capable of carrying out the mission of counting in both directions. It raises the counter when any individual enters the mall through the entry and also when any person exits the mall through the exit, the value of the counter decreases accordingly.

## EXTRACURRICULAR

### Formula Bharat-2021

Placed 4th in the annual FSEV Concept challenge tasked student racing teams to design a Formula Student Electric Vehicle Powertrain Package.

### DIKSHA

Prepared educational content for Pre-University students under the Government of India's DIKSHA project.

## CERTIFICATES

The Joy of Computing using Python - Elite Silver -NPTEL

Introduction to Git and GitHub - Coursera