Ritik Raj

Email: ritik_r@ch.iitr.ac.in
Phone no.: +91-8340654369
GitHub: github.com/ritikraj7

Areas of Interest : Digital Electronics and Computer Architecture

Education

IIT Roorkee — Roorkee, Uttarakhand
Bachelor of Technology–Electronics and Communication Engineering — July 2019–Current
GPA: 9.512/10

Mother Khazani Convent School — Mungeshpur, Delhi
Higher Secondary Education, CBSE — July 2017–May 2019
Grade 12 Percentage: 92.4%

MK DAV Public School(CBSE) — Daltonganj, Jharkhand
Grade 10 CGPA: 10/10 — April 2009–April 2017

Projects

Fully autonomous hexacopter drone — September 2020–Present
AUVSI-SUAS Competition 2021

- The competition is organized by Association for Unmanned Vehicle Systems International, USA
- The specific role is to design and implement horizontal LiDAR system for avoiding static and dynamic obstacles and other electronics tasks such as battery selection. Two LiDAR sensors are to be mounted such that they are 6 degrees apart and then they are to be rotated around vertical axis.
- The major objective of the drone is to deliver packages to customers by dismounting an autonomous ground vehicle
- Communication with the ground station via telemetry and Ubiquiti channels.Performs onboard object detection, localization and classification of objects

Design and Implementation of FPGA - Digital Based PID Controller — April 2020–June 2020
Supervisor: Dr Bishnu Prasad Das, Associate Professor, IIT Roorkee

- Digital Logic Design Course Project
- Based on the paper: M. Kocur, S. Kozak, and B. Dvorscak, "Design and Implementation of FPGA - Digital Based PID Controller", Slovak University of Technology, Bratislava, January 2016
- Worked in a group of 4 to implement gate level description of discrete PID algorithm for FPGA in verilog HDL using Xilinx Vivado Design Suite
- Most of the implementation was based on existing literature that includes adders, multipliers and registers with 16 bit word size and I added multiplexers to implement the reset function

RFID locks with arduino + fingerprints — Jan 2020–March 2020
It was presented in Annual Technical Exhibition, IIT Roorkee

- Worked in a group of 4 to implement an automatic door lock using passive tag EM-18 RFID Module
- The project also included a fingerprint sensor and a 2*16 LCD display screen
- This project was implemnted using an Arduino UNO microcontroller and programmed using Arduino IDE

Relevant Courses

ECN 104: Digital Logic Design

ECN 207: Computer Architecture and Organization

ECN 242: Semiconductor Devices

ECN 291: Electronic Network Theory

ECN 203: Signals and Systems

Technical Skills

- **Programming Languages:** C/C++, Python, Octave, Verilog HDL, HTML
- **Softwares and Tools:** Xilinx Vivado, Jupyter Notebooks, LT Spice, LaTeX, Arduino IDE

Academic Achievements

- Changed my branch from Chemical Engineering to Electronics and Communication Engineering after first semester(December 2019) in IIT Roorkee
- Ranked 3665 out of 173 thousand aspirants in JEE Advanced 2019
- Ranked 8135 out of 1.1 million aspirants in JEE Mains 2019
- Ranked 1166 out of 50 thousand aspirants in KVPY 2018

Extracurricular Activities

- Volunteer - National Service Scheme, IIT Roorkee
  Organized a Blood Donation Camp
  Organised cleaning drives for Roorkee city and Ganga river
- Volunteer - SPIC MACAY, heritage club IIT Roorkee
  Regularly organize classical music and art concerts
- Awarded a gold certificate for completing 108 rounds of Surya Namaskar
  I got it in the Yogathan challenge organized by Art of Living