

Rudrajyoti Roy

ELECTRONICS AND COMMUNICATIONS ENGINEER · ASPIRING RESEARCHER

A-1/20, Kalyani, West Bengal, India · Vidyasagar Hall, IIT Kharagpur, West Bengal, India

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Summary

Hi, I am a final year student majoring in Electronics and Electrical Communication Engineering and aspiring researcher with a strong interest and expertise in Digital and Mixed-Signal VLSI Circuit Design and Verification, Computer Architecture and Embedded Systems Design, High Performance Computing and Reliable Cyber-Physical Systems development. I am actively looking for research opportunities in the above domains.

Education

Indian Institute of Technology (IIT), Kharagpur

Kharagpur, West Bengal, India

B.TECH IN ELECTRONICS AND ELECTRICAL COMMUNICATIONS ENGINEERING (3RD YEAR ONGOING)

Jul. 2018 - Aug. 2022 (expected)

- Cumulative Grade Point - **9.24** · Additional Cumulative Grade Point - **9.38** (After 6th semester)
- Minor in Computer Science and Engineering
- Micro-Specialization in Embedded Control, Software, Modelling and Design

Skills & Coursework

Electronics Coursework

Analog Electronics, Digital Electronics, Signals and Systems, Analog, Digital Communications, Control Systems

Micro-Specialization

Embedded Sensing, Actuation, Interfacing, Micro-controller Embedded Systems, Embedded Control Systems

Other Coursework

Digital Signal Processing, Cyber-Physical Systems, Algorithms-I, Parallel Programming(CUDA)

Software Skills

C, C++, CUDA, OpenCL, Python, MATLAB, Simulink, Arduino IDE, LTSpice, Verilog, SystemVerilog, UVM

Other Skills

Algorithms, Machine Learning, Deep Learning(Coursera), Image Processing, Computer Vision

VLSI Summer School

Analog Frontend Design, Gain-Bandwidth Optimisation using Genetic Algorithm, ML/DL on edge devices

Languages

English, Hindi, Bengali

Research Experience

Selective Detection of Multiple Volatile Organic Compounds in Air Employing ZnO Nanorods using Principle Component Analysis

IIT Kharagpur

GUIDE :- PROF T K BHATTACHARYYA (E& ECE DEPT) | MENTOR :- MR. AVIK SETT

Dec. 2019 - Present

- Designed a python code for automated pre-processing, segmentation and Principle Component Analysis based classification of time-series dataset obtained from Gas Sensor array when periodically exposed to Dry Air mixed with Volatile Organic Compounds (e.g Acetone, Ethanol).
- Co-authored a research paper and published in **IEMENTECH 2020 conference**. (link in title)

Efficient CUDA based Optimization of Object Detection using RCNN pipeline

IIT Kharagpur

TERM PROJECT, HIGH PERFORMANCE PARALLEL PROGRAMMING, GUIDE : PROF. SOUMYAJIT DEY

Feb. 2021 - Apr. 2021

- Implemented efficient CUDA convolution kernels from scratch and constructed the neural network inferencing pipeline as a task graph
- Achieved **100x speedup** over naive multiplication and **2x speedup** over optimised cuBLAS subroutine for 2048*2048 GEMM operation.

SWARM Robotics Research Group

IIT Kharagpur

ELECTRONICS AND EMBEDDED TEAM MEMBER

Mar. 2019 - Sep. 2020

- Designing and component-level testing (on breadboard) for a custom PCB for control, sensing, actuation and data communication in robots.

Awards & Achievements

COMPETITIONS

Mar. 2021 **Runner-Up**, Jaguar Landrover's Damping Energy Harvesting Problem (Inter IIT Tech Meet)

IIT Guwahati, India

Jul. 2020 **Semi-Finalist**, Flipkart GRiD 2.0 Autonomous Indoor Drone Challenge

Bangalore, India

Jan. 2020 **Second-Runner Up**, Tesseract (Autonomous Arduino-Based Robotics Challenge) Team Leader

Kshitij, IIT KGP

Mar. 2020 **VS Hall Team Member**, Inter-Hall Product Design Competition

TSG, IIT KGP

ACADEMIC ACHIEVEMENTS

2020 **Top 10%**, Present position in my batch in terms of CGPA

IIT Kharagpur

2018 **All India Rank 1320**, JEE Advanced Examination

India

2018 **All India Rank 2803**, JEE Mains Examination

India

2017 **All India Rank 3**, KVPY SA-E Research Fellowship Examination

India

Extracurricular Activities

Sports

Chess, Table-Tennis, Badminton

Music

Member of Hall Band(East Indian Vocalist and Pianist), Participated in Open IIT contests

Volunteering

Taught poor kids and engaged in social welfare of remote villagers as an NSS volunteer