Saptarshi Mitra *May 14, 1995*

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Academic Details

Examination/Degree	University	Year	GPA/%
Master of Science: *Communication Engineering*	Technical University of Munich	July, 2021	1,5 (German Grade)
Bachelor of Technology: *Electronics & Communication Engineering*	NIT Durgapur, India	May, 2017	9.14/10
Higher Secondary Examination	WBCHSE	May, 2013	88.8; Percentile : 99.97
10th Std. Examination	WBBSE	May, 2011	86.5

Publications

- ***Accelerating and Pruning CNNs for Semantic Segmentation on FPGA"***, *59th ACM/IEEE Design Automation Conference,*(***DAC 2022***) **[Accepted]**
- Anish Pradhan, Soumi Basu, Sreetama Sarkar, **Saptarshi Mitra** and Dr. Sanjay Dhar Roy. ***Implementation of Relay Hopper Model for Reliable Communication of IoT Devices in LTE Environment through D2D Link***, *10th International Conference on COMmunication Systems & NETworkS* (*COMSNETS 2018*)
- Sreetama Sarkar, **Saptarshi Mitra**, Tamoghno Nath and Dr. Sanjay Dhar Roy. ***Performance of Different Power Control Schemes for a Hybrid LTE System with Channel Impairment***, *The 2017 International Electrical Engineering Congress* (*iEECON2017*)
- Sayan Sarkar, Gautam Ghosh, Amitrakshar Mohanta, Atreye Ghosh, **Saptarshi Mitra**. ***Arduino Based Foot Pressure Sensitive Smart Safety System for Industrial Robots***, *Second IEEE International Conference on Electrical, Computer and Communication Technologies* (*ICECCT 2017*)

Experience

Deeplite — Toronto, Canada
Deep Learning Engineer in Research & Development — *July '21 – Present*
- Runtime for Neutrino model optimizer, providing significant speedup through extreme Quantization
- Development of compiler and custom runtime for ARM Cortex-M series of devices
- Deploy concurrent inferences for a prototype on Jetson Nano board via multithreading

Technical University of Munich — Munich, Germany
Student Research/Teaching Assistant — *Oct '20 – Feb '21*
- Automation of organization & grading of the Seminar course at the Chair of Design Automation
- Responsible for tutoring and mentoring graduate level students in VHDL System Design Lab (EI7403)

Intel — Munich, Germany
Internship & Working Student — *March '19 – July '20*
- During Internship, worked with Digital Design Verification team (Modem Technology Group) for development of a functional pre-silicon Verification IP (VIP) for a standardized AMBA debug interface.
- As a part of Intel Architecture, Graphics and Software (IAGS) group, validated system-level debug framework and various features related to CPU run control

Verizon — Hyderabad, India
Software Engineer — *Jun '17 – July '18*
Full stack developer (Angular & Spring boot) in Network & Technology Group

TCS Innovation Labs — Kolkata, India
Research Intern — *May '16 – July '16*
Localization of mobile Robots with ROS

Academic Projects

'Accelerating Sparse Neural Networks for Semantic Image Segmentation on FPGA platforms' *2020-2021*
- Novel dilated convolution irrespective of dilation rate and fitting the sparse weights in the on-chip buffer
- Efficient semantic image segmentation accelerator deploying state-of-the art model DeepLabV3+
- Hardware aware latency driven Genetic Algorithm based channel pruning for the custom accelerator

'Sustaining Reduction in Carbon Emissions Based on Policy Decisions post COVID-19 Crisis' *2020*
- Investigating the effects of stringent policy decisions imposed by various Governments on CO_2 emission
- Data collection, cleaning and building a web-application that implements a comprehensive data analysis pipeline with ML models in back-end and UI for interactive visualization

'Radio-Controlled Multi-Functional Clock in Zync-7000 FPGA' *2019-20*
- Specification and RTL design of the Global Finite State Machine module of the clock
- Integration with other modules like alarm clock, stopwatch and deployed on FPGA

'Hardware-Oriented Implementation of IDEA in Spartan-3e FPGA' *2018-19*
- Used VHDL to implement and simulate the International Data Encryption Algorithm.
- Implemented Resource Constrained Scheduling for optimum resource utilization

'An Analysis of the Cyber-Attacks on Industrial Control Systems and Possible Countermeasures' *2017*
with Dr. Anupam Chattopadhyay (NTU, Singapore)

'The Investigation of Power Control Schemes for a Device-to-Device Communication integrated into OFDMA Cellular System' *2016-17*
- Analysis of the performance of different power control schemes (CFOL-DSINRT, CFOL-DFIX, CFOL-DFOL etc) in a hybrid LTE system introducing channel impairments (Shadowing, Fading)
- Simulation of CDF with Tx. power and SINR in Matlab

'A Method for Measuring, Comparing and Correcting Dead-Reckoning Systematic Errors in Mobile Differential Wheeled Robot' *Summer'2016*
- Identify the Dead reckoning Systematic and Non-Systematic Errors of Mobile Robots and their sensors
- Performed UMBmark test with FireBird VI to calibrate odometer values and introduce a correction term in wheel base diameter in the dynamic Equation of Differential Drive Robot

'Safety System for Robotic Work Environment' *2015-16*
- The model was designed as a part of General Electric's Edison Challenge 2016 (Team ArdIOT, NIT-Durgapur) and was shortlisted for the final rounds
- A real-time, MEMS sensor (PZT material) based, economical approach with IOT integration to ensure the safety in robotic workspace by shutting the robot system off or slowing it down upon human entry

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Scholastic Achievement

Design Automation Conference (DAC) 2021 Young Fellow *Dec 2021*

Deutschlandstipendium, German National Scholarship Program for academic excellence, TUM *2018-21*

Global Initiative Of Academic Networks : International Summer and Winter Term; Special Topics on Robotics at IIT Kharagpur *2015*
Selected and attended course on Autonomous and Field Robotics- Micro-Nano-Robotics Manipulation - Medical Robotics

Scheme of Scholarship for College and University Student reg. of Government of India *2013*
Got an award on the basis of Higher Secondary Examination held by West Bengal Council of Higher Secondary Education

DST-INSPIRE Internship Science Camp *2011*
Selected and Participated at JBNSTS, Kolkata

Department of Science & Technology (DST) sponsored INSPIRE award *2010*
For academic excellence from 6th to 10th standard

'Best of Subject Category : Engineering' in India *2009*
At IRIS science fair conducted by Intel corporation, CII and DST held at Ahmedabad

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Skills

C , Python , VHDL , OpenCL, TVM , Verilog , SystemVerilog , UVM , VCS, Arduino , MATLAB , LaTeX , Logisim, Dash (Framework with Flask and React) , Angular 5 , C++ , Java , Spring Boot, SQL , ROS , Assembly Level Programming, GDB , Atmel Studio , Cadence Virtuoso , Multisim , Keil uVision, HTML, CSS , Cadsoft Eagle

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Extra Curricular Activities

Semester Representative and Member of Quality Circle, MSCE, TUM *2018-2021*

Volunteer at Ronald McDonald House Charities on behalf of Intel Involved program *2019*

Volunteer at TEDx Jadavpur University *2018*
played an active role in inviting speakers and arranging the event

Chief Events Coordinator of Prakriti - the Environmental club of NIT Durgapur *2016-17*
which was involved in activities like organizing plantation programs, observing earth hour, campus cleaning etc.

Google Online Marketing Challenge (GOMC) 2016 *2016*
Partnered with www.mayallyang.com on creating AdWords online marketing campaign for their expansion of Ecotourism . Ranked : Good

DuckDuckGo and Mozilla(l10n,e10s,webVR) *2014-Present*
Community member and Active Contributor

Volunteer at Blood Donation Camps organized by State Blood Transfusion Council, West Bengal *2014*