

PARTH SARTHI SHARMA

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EDUCATION

Cornell University

MEng (Electrical and Computer Engineering)

Jan 2021 - Dec 2021

Cumulative GPA: 4.04

I finished my masters program with a specialisation in Embedded Systems programming. I studied course work like:

- Design with Embedded Operating Systems
- Digital Systems Design Using Microcontrollers
- Power Electronics
- Integrated Micro Sensors and Actuators: Bridging the Physical and Digital Worlds
- Robots as Embodied Algorithms

Ambedkar Institute of Advanced Communication Technologies and Research *2015 - 2019*

B.Tech (Electronics and Communication Engineering)

Overall CGPA: 8.3 / 10

I finished my undergraduate studies with a first division and studied courses like:

- Embedded Systems
- Microprocessors and Microcontrollers
- Digital System Design
- Computer Organisation and Architecture
- Data Structures and Algorithms

WORK EXPERIENCE

JAN 2022 - CURRENT

Oculii Corporation

Software Engineer

Working on writing firmware for FMCW radars

JUN 2021 - DEC 2021

Collective Embodied Intelligence Lab, Cornell University

Graduate Student Researcher

Worked on the development of a human scale inflatable (HSI) rover called Martha in collaboration with a hardware team.

Redesigned the pre-existing pulley architecture and software to solve the problem of overshooting.

Successfully optimized the preexisting code-base to reduce the memory usage of the rover by 60%.

JAN 2021 - MAY 2021

Cornell University

Graduate Teaching Research Specialist

My duties included, but were not limited to, assisting Prof. Peter Derschuk with debugging and testing the laboratory systems and grading the assignments/homework submitted by the students with ECE 4670 (Digital Communication System Design)

JUN 2019 - SEPT 2020	<p>Indian Institute of Technology, Delhi <i>Research Associate</i> Worked on Genetic Algorithms for energy conservation in power grids under Prof. Ashu Verma Worked on hacking CAN Bus and disrupting data under Prof. B. K. Panigrahi</p>
JUN 2018 - AUG 2018	<p>Indian Institute of Technology, Delhi <i>Intern</i> Worked on “Energy Efficient Buildings” under Prof. B.K. Panigrahi and Prof. Ashu Verma Successfully developed an integrated light automation system (for HVAC) with 4 ambient zones</p>
JUN 2017 - JUL 2017	<p>Micoth Pvt. Ltd., Delhi <i>Summer Trainee</i> Summer training on Embedded Systems, Internet of Things and Mind Controlled robotics</p>

PATENTS

Ashu Verma, B.K. Panigrahi, Sumedha Sharma, Parth Sharma, “Optimal Building Energy Management System” (Indian Patent Application No.: 202011051401)

RESEARCH PUBLICATIONS

“A Cyber-Secure Distributed Control Architecture for Autonomous AC Microgrid,” in IEEE Systems Journal, doi: 10.1109/JSYST.2020.3020968.

“Development of a Cost-effective Color Pattern-based Security System,” 2019 6th International Conference on Computing for Sustainable Global Development (INDIACom), New Delhi, India, 2019, pp. 988-991.

“Coin Detection based Mobile Charging System,” 2019 6th International Conference on Computing for Sustainable Global Development (INDIACom), New Delhi, India, 2019, pp. 60-63.

“Localisation of License Plate and Character Recognition Using Haar Cascade,” 2019 6th International Conference on Computing for Sustainable Global Development (INDIACom), New Delhi, India, 2019, pp. 971-974.

PROJECTS

Working on the RaspberryPi Pico

- As a part of my MEng Project at Cornell University, I have worked intensively with the new RaspberryPi Pico microcontroller under the guidance of Prof. Van Hunter Adams and Prof. Bruce Robert Land.

Rescue Robot: Scouting Owl

- As a part of the final project for ECE 5725: Design with Embedded Operating Systems, I along with Robby Huang (E-Mail: lh479@cornell.edu) worked on a rescue robot called “Scouting Owl” which can be controlled remotely over a local network using TCP/IP protocol.

Voice Controlled Dino Game

- As a part of the final project for ECE 4760: Digital Systems Design Using Microcontrollers, I along with Shreyas Patil (E-Mail: sp2544@cornell.edu) worked on a voice controlled version of the Google Dino game on the PIC32 microcontroller. The microcontroller we used is a PIC32MX250F128B microcontroller on the SECABB development board.

COVID-19 Social Distance Enforcing Robot

- As a part of the final project for ECE 6950: Robots as Embodied Algorithms, I along with Ishaan Thakur (E-Mail: it233@cornell.edu) worked on developing a COVID-19 social distance police which enforced the social distancing protocol. The robot ran YOLOv3 to detect people and used bounding box estimation to compute the distance between the robot and people violating the protocol.

Multi-Pit Cantilever Biosensor

- As a part of the final project for ECE 4320: Integrated Micro Sensors and Actuators, I worked on the design a MEMS device for the detection of multiple micro-organisms at the same time.

High frequency AC switching using TRIACS

- This was a subset of “Optimisation of power supply and demand parameters”
- I worked on developing an easy to install module that can control up-to 4 appliances over the internet. I used TRIACS and designed a circuit using optocouplers and NodeMCU in order to switch the appliances. I also created an android application using MIT App Inventor, a desktop GUI using Processing and integrated everything using Google Firebase.

Implementation of Alexnet for self-driving car

- This project was a part of my senior thesis during my undergraduate studies.
- During the final semester of my undergraduate studies, I created a rudimentary version of a prototype self driving car using RaspberryPi and Alexnet. I first built a simple single lane track to run my model car on, used a controller and a RaspberryPi camera module to record the image data and commands sent by me and then trained a model. Then I downloaded the model on RaspberryPi and ran the model. The accuracy achieved was roughly 92%.

Hand Motion Controlled Quadpod Robot

- This project was a part of my junior thesis during my undergraduate studies.
- During the second last semester of my undergraduate studies, I created a Quadpod robot that can be controlled wirelessly using hand gestures. It consists of two modules: the Quadpod and the Controller. The controller has an accelerometer and a gyroscope which sends the orientation of the hand over to the Quadpod via Bluetooth and the Quadpod reacts accordingly.

SKILLS AND ABILITIES

Hardware Platforms	RP2040, PIC32, Arduino, RaspberryPi 4, ESP32
Programming Languages	C/C++, Python, JAVA
Tools	MATLAB, Git, Processing, OpenCV, L ^A T _E X
Areas of Interest	Embedded Systems, RTOS, Internet of Things, MEMS Devices

RELEVANT EXAMS

GRE

Score: 324 (Quantitative Reasoning: 169, Verbal Reasoning: 155, AWA: 4)

2019

Graduate Aptitude Test in Engineering (GATE)

Score: 41.33/100, Normalised Score: 519/1000, Rank: 4483/104782

2019

TOEFL

Score: 110

2019

ACHIEVEMENTS

LFR, BVP (2018)

2nd position

Evoluzione, BVP (2018)

3rd position

LFR, IGDTUW (2017)

2nd position

Robotuille, IGDTUW (2016)

2nd position

Robo-LFR, BPIT (2016)

1st position

Silverzone International Olympiad of Science (2012)

All India Rank: 156