

# PARTH SARTHI SHARMA

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## EDUCATION

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### Cornell University

2021 - Current

MEng (Electrical and Computer Engineering)

Cumulative GPA: 4.0

I am currently in the final semester of my masters program. My area of specialisation is Embedded Systems programming. I have taken up course work like:

- Design with Embedded Operating Systems
- Digital Systems Design Using Microcontrollers
- Integrated Micro Sensors and Actuators: Bridging the Physical and Digital Worlds

### 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

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JUN 2021 - CURRENT

### Collective Embodied Intelligence Lab, Cornell University

#### *Graduate Student Researcher*

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

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

### Indian Institute of Technology, Delhi

#### *Research Associate*

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

JUN 2018 - AUG 2018	<b>Indian Institute of Technology, Delhi</b> <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
JUN 2017 - JUL 2017	<b>Micoth Pvt. Ltd., Delhi</b> <i>Summer Trainee</i> Summer training on Embedded Systems, Internet of Things and Mind Controlled robotics

## PATENTS

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

## RESEARCH PUBLICATIONS

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“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

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### 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.

### 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

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<b>Hardware Platforms</b>	RaspberryPi Pico, PIC32, Arduino, RaspberryPi3B+/4, NodeMCU
<b>Programming Languages</b>	Novice in C/C++, Python, JAVA
<b>Tools</b>	MATLAB, MIT AppInventor, Processing, OpenCV, Gurobi, L <sup>A</sup> T <sub>E</sub> X
<b>Areas of Interest</b>	Embedded Systems, Internet of Things, MEMS Devices

## RELEVANT EXAMS

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<b>GRE</b>	2019
Score: 324 (Quantitative Reasoning: 169, Verbal Reasoning: 155, AWA: 4)	
<b>Graduate Aptitude Test in Engineering (GATE)</b>	2019
Score: 41.33/100, Normalised Score: 519/1000, Rank: 4483/104782	
<b>TOEFL</b>	2019
Score: 110	

## ACHIEVEMENTS

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LFR, BVP (2018)	2 <sup>nd</sup> position
Evoluzione, BVP (2018)	3 <sup>rd</sup> position
LFR, IGDTUW (2017)	2 <sup>nd</sup> position
Robotuille, IGDTUW (2016)	2 <sup>nd</sup> position
Robo-LFR, BPIT (2016)	1 <sup>st</sup> position
Silverzone International Olympiad of Science (2012)	All India Rank: 156