

PARTH SARTHI SHARMA

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EDUCATION

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:

- ECE 5725: Design with Embedded Operating Systems
- ECE 4760: Digital Systems Design Using Microcontrollers
- ECE 4320: 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:

- ETEC 401: Embedded Systems
- ETEC 305: Microprocessors and Microcontrollers
- ETEC 309: Digital System Design
- ETCS 204: Computer Organisation and Architecture
- ETCS 209: Data Structures and Algorithms

WORK EXPERIENCE

JUN 2021 - CURRENT

Collective Embodied Intelligence Lab, Cornell University

Graduate Student Researcher

Optimized the performance of Martha (HSI rover) by 60%.

Currently working on the unit testing and integration testing of all rover components.

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

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.

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	RaspberryPi Pico, PIC32, Arduino, RaspberryPi3B+/4, NodeMCU
Programming Languages	Novice in C/C++, Python, JAVA
Tools	MATLAB, MIT AppInventor, Processing, OpenCV, Gurobi, L ^A T _E X
Areas of Interest	Embedded Systems, Internet of Things, MEMS Devices

RELEVANT EXAMS

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

ACHIEVEMENTS

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