

Apratim Mukherjee

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Education

Manipal Institute of Technology

Manipal, KA

BACHELOR'S IN COMPUTER SCIENCE AND ENGINEERING

July. 2016 - Expected April. 2020

- Relevant Coursework: Data Structures, Object Oriented Programming, Design and Analysis of Algorithms, Database Systems, Micro-processors.

Research Experience

Project MANAS (www.projectmanas.in)

Karnataka, India

HEAD OF PERCEPTION

Feb. 2018 - Present

- Responsible for the Perception subdivision under Artificial Intelligence.
- Overseeing the completion of a bot for the **26th Intelligent Ground Vehicle Competition** and a **self-driving car** for the Mahindra **\$1Million Rise Prize** challenge.

Project MANAS

Karnataka, India

AI DIVISION (PERCEPTION) MEMBER

Feb. 2017 - Jan. 2018

- Worked on different tasks revolving around the perception of the car.
- Wrote different algorithms for tasks such as **Lane Detection**, **Speed bump Detection**, **Sensor and Data Fusion**, **Localization** etc. using **Image Processing** and **Deep Learning**.

Projects

Autonomous Bot for IGVC

Completed

MANIPAL INSTITUTE OF TECHNOLOGY

Jan. 2018 - Jun. 2018

- Headed the perception team responsible for mapping out the environment around the bot.
- Different Computer Vision and Deep Learning approaches to achieve the most desirable results were used.
- Placed **9th** among 27 teams from across the globe and **2nd** in India.

Augmentation of Images for bettering Class-wise Accuracy for Deep Neural Networks

Currently in literature review stage

MANIPAL INSTITUTE OF TECHNOLOGY

Feb. 2018 - Present

- Writing a **research paper** under Dr. Ashalatha Nayak.
- Research revolves around a novel method of **augmentation** and studying its effects on the performance of **Deep Neural Networks**.

Self-Driving Car for the Mahindra Rise Prize Challenge

Work in Progress

MANIPAL INSTITUTE OF TECHNOLOGY

Feb. 2017 - Present

- Currently working on getting the car to level 3-4 autonomy.
- Responsible for the handling the data through a lidar and stereoscopic camera.
- Successfully implemented **Lane Detection**, **Speed Bump Detection**, **Data Fusion** amongst other things from things from scratch.
- Continuously involved in other tasks of **Traffic Light and Sign Detection** as well as Localization.

InterFace

Continuous Updates

MANIPAL INSTITUTE OF TECHNOLOGY

Feb. 2018 - Feb. 2018

- Created an interface that lets the user control any web page through a **series of gestures** along with **eye tracking**.
- Used Computer Vision algorithms along with Machine Learning for gesture recognition and eye tracking with an integration through **Flask** and **Node.JS**.

NumJ

Completed

MANIPAL INSTITUTE OF TECHNOLOGY

Oct. 2017 - Nov. 2017

- Attempted to build a **NumPy counterpart** for Java to ease the flow of weights through a neural network.
- Were successful in integrating most of the **matrix operations** required for the **propagation of weights in a neural network**.
- The library was completely **multi-threaded** while we looked for better ways i.e **executors**.

Java Deep Learning Library (JDL)

Completed

MANIPAL INSTITUTE OF TECHNOLOGY

Oct. 2017 - Nov. 2017

- Built a **Deep Learning Library** from ground up in Java.
- All the operations on the weights were handled by **NumJ**.
- Were successful in creating a neural network for the **classification** of handwritten digits (**MNIST** dataset) using **JDL** with an accuracy of **95%**.

Skills

Programming C++, Python, Java, C, Matlab, GNU Octave, SQL

Libraries & Tools NumPy, Pandas, OpenCV, imgaug, ROS, Scikit-Learn, Matplotlib, Keras, Tensorflow, PyTorch, TFLearn

Experienced in Artificial Intelligence, Deep Learning, Computer Vision, Machine Learning, Image Processing, Robotics

Extracurriculars

- One of the **13** out of **153** teams remaining for the **Rise Prize Challenge**.
- Finalists for the **Philips Hackathon 2017**.
- **Deep Learning Specialization** by **deeplearning.ai** (<https://www.coursera.org/account/accomplishments/specialization/7G4YBFSJTVUH>)
- **Mathematics for Machine Learning Specialization** by **Imperial College London** (<https://www.coursera.org/account/accomplishments/specialization/L>)
- **Parallel, Concurrent and Distributed Programming in Java Specialization** by **Rice University** (<https://www.coursera.org/account/accomplishments/specialization/M2RRE2NZN2UW>)
- **Bayesian Statistics : From Concept to Data Analysis** by **UC Santa Cruz** (<https://www.coursera.org/account/accomplishments/verify/YH87Z4GUW5WB>)
- **An Introduction to Practical Deep Learning** by **Intel** (<https://www.coursera.org/account/accomplishments/verify/9QAWKK2JN4M6>)
- Represented my high school at state level basketball tournaments; passionately follow and play both basketball and football.
- Lover of all music, guitarist/vocalist in my college band.