SHAUNAK SRIVASTAVA

Course :**M.Sc. (Hons.)**, Mathematics and **B.E. (Hons.)**, Electronics and Communication Engineering, 2022
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CGPA :7.15

ACADEMIC DETAILS

COURSE	INSTITUTE/COLLEGE	BOARD/UNIVERSITY	SCORE	YEAR
CLASS XII	CMR National Public School	CBSE	94.6 %	2017
CLASS X	Sishu Griha Montessori and High School	CISCE	94.4 %	2015

Subjects / Electives	Discrete Mathematics, Data Structures and Algorithms, Algorithms on Graphs, Linear Algebra, Cryptography, Algorithmic Toolbox, Optimization, Numerical Analysis, Statistical Inferences and Applications, Digital Design, Graphs & Networks, Probability and Statistics, Signals and Systems, Control Systems, Microprocessors and Interfacing, Digital Signal Processing, Computer Architecture, Non-Linear Optimization, Deep Learning, Digital Image Processing, Object Oriented Programming, Game Theory, Applied Stochastic Processes
Technical Proficiency	Python3, OpenCV, PyTorch, Tensorflow, Keras, NumPy, C Programming, C++ Language, Image Processing, Deep Learning, Neural Networks, Algorithms, Algorithm Design, MATLAB, ROS, Github

SUMMER INTERNSHIP / WORK EXPERIENCE

Research Intern, Robotics Institute, Carnegie Mellon University **Sep 2021 - Present**
- Primary area of work is in 3-D Computer Vision for realistic **3-D face synthesis**.
- Developing Generative Models (**GANs**) using PyTorch and competing with state-of-the-art methods.

Project Intern, Carraro India Pvt. Ltd. **May 2019 - Jul 2019**
- Researched on Statistical Process Control and its use in optimizing Six Sigma Processes.
- Analyzed manufacturing process data to find variations using statistical tools.
- Conducted statistical studies to find Process Capability (Cp), Process Capability Index (Cpk).

PROJECTS

Ant Exploration using RL - Reinforcement Learning **Nov 2020 - Dec 2020**
- Created a Reinforcement Learning agent using *NEAT-python* for environment exploration and collision avoidance. Link
- Used pygame for creating the game environment.
- NEAT-python implements an **evolutionary neural network** to perform learning.
- Experimented with different environment layouts to understand effect on learning speed.

Multi-Object Tracking - Computer Vision **Jun 2020 - Present**
- Designed an algorithm for Multi-Object Tracking which has been tested on the ***MOT Challenge benchmark*** and the *KITTI dataset*. Link
- Studied various online tracking algorithms such as *SORT, DeepSORT* etc.
- Explored *CNN* and *colour histogram* based feature descriptors for data associations.
- Worked with algorithms such as Kalman Filters, Hungarian Association Method, Linear Assignment, Feature Extraction and Track Management
- Implemented using ***Python, NumPy and OpenCV***.

Localization and Path Planning for Autonomous Vehicles - Mobile Robotics **Aug 2018 - Dec 2018**
- Created a working simulation which demonstrates **autonomous navigation** of a vehicle on an a path with obstacles.
- Used the **ROS** framework and **Python** for programming along with **Gazebo** for the simulation environment.
- Used **Sensor Fusion** data, such as 3D depth data from RGB-D sensors, IMU data and GPS data for the simulation.
- Implemented algorithms like **SLAM**, **GMapping** and **Extended Kalman Filters** for localization.

Dynamic Hand Gesture Control - Computer Vision **Jul 2020 - Jul 2020**
- Implemented a Hand Gesture recognition system and its application for Power Point Presentations. Link
- Used **Google's mediapipe** hand-tracking model for hand detection followed by classical techniques for gesture recognition using **Python** and **OpenCV**.

CERTIFICATIONS

CERTIFICATION	CERTIFYING AUTHORITY	DESCRIPTION
Algorithms on Graphs	Coursera	Djikstra's Algorithm, Bellman-Ford, Kruskal's Algorithm
Deep Learning Specialization	Coursera	Neural Networks, Hyper-parameter Tuning, CNNs, Sequence Models
Algorithmic Toolbox	Coursera	Time Complexity, Greedy Algorithms, Dynamic Programming
Data Structures	Coursera	Binary Search Tree, Priorty Queue, Hash Table, Stack, List

POSITION OF RESPONSIBILITY

Core Member - Mime Club **Aug 2019 - May 2020**

As a Core Member, my primary role was as Director for a crew of 30 members. Content creation and stage execution came under responsibility.

EXTRA CURRICULAR ACTIVITIES

Acting and Direction

I have been active member for the Mime Club for the last three years and was a core member for the 2019-20 team. I was part of 7 productions as an actor and director. Apart from these, I have also been part of 2 short film productions.

Event Organization

Worked for the **Department of Sponsorship and Marketing** to raise funds and manage on fest marketing for our cultural, technical and sports festivals.

Sports and Athletics

Won several accolades in individual events such as sprints and long jump along with several team events like Football, Relay and Kho-Kho.

AWARDS AND RECOGNITIONS

4th State Rank Math Olympiad | Silverzone Foundation

SCHOLARSHIPS

National Talent Search Examination (NTSE) **May 2015**

The National Talent Search Examination (NTSE) is a prestigious award given to students excelling in the studies related to science and encouraging further studies by giving a scholarship. I successfully cleared the NTSE examination at the state level.

COMPETITIONS

Cottons Model United Nations **Aug, 2015**

Secured the Best Position Paper Award.

Sishu Griha Model United Nations **Jun, 2014**

Secured the Best Position Paper Award.

Indian Robotics Olympiad **Sep, 2013**

Secured Third Position a the regional round and qualified to compete at the National Level.

First Lego League **Jan, 2012**

Awarded the Best Design for our Robot.

LANGUAGES KNOWN

English, Hindi