Mohammed Sharfuddin

Contact Information	OBH, 32 IIIT Hyderabad Gachibowli,500032 Github	*Ph* +91-9490130991 *Email:* mohdsharf7404@gmail.com *Webpage:* https://captainsharf.github.io CaptainSharf

Research Interests: Computer Vision, Virtual Reality, Deep-Learning and Reinforcement-Learning

Education

B.Tech in Computer Science and Engineering — **August 2014-Present**
International Institue of Information Technology,Hyderabad — **CGPA:8.28**

Work Experience

Research Assistant
Dreamvu Inc. — ***May'17-(Current)***
Working on the problem of improving the resolution and quality of videos captured by the VR setup in real-time. I previously worked on the problem of camera calibration and making the process of calibration invariant to relative motion between components in the camera

Teaching Assistant
IIIT Hyderabad — ***Spring'18,Fall'16***
I have worked as a teaching assistant for Statistical methods in AI (Spring'18) and Science-1(Fall'16) .I was responsible for conducting tutorials,grading assignments and quiz in both these courses.

Research Assistant
LVP-MITRA — ***May'16-May'16***
Worked with a team of five on developing a low-cost corneal topographer, that produces a diopter plot used by opticians to determine the power of lens that needs to be prescribed to a patient.

Scholastic Achievements

- Awarded **Dean's Merit list** award for excellence in academics for year 2016-17.
- Awarded **KVPY Scholarship** by the Indian Institute of Science in the year 2013 (Rank 520).

Major Projects

Calibrating Videos from VR camera to Stereo Videos
Dr.Anoop Namboodiri,Rajat Aggarwal — *May-July'17*
Generated stereo videos from the videos captured by our VR camera using non-parametric camera calibration method as proposed here. I also made calibration invariant to relative motion between components in the camera by aligning the video frames to a standard orientation using RANSAC based homgraphy transformation.

Deblurring and Super-resolution of Calibrated Stereo Panoramas
Dr.Anoop Namboodiri,Rajat Aggarwal — *July-Sep'17*
Used Blind-Deconvolution based deblurring algorithm to improve the quality of the calibrated video frames. The resolution of the deblurred frames was improved by using a GAN network derived from "Photo-realistic single image super-resolution using GAN"(SRGAN) trained for Super-resolution on the DIV2K dataset.

Bots for Breakout and Pacman using DQN
Dr.Girish Varma — *Jan-Mar'17*
Created intelligent agents that could play Breakout and MsPacman(Breakout-v0 and MsPacman-v0 environments in OpenAI gym) using a simple Deep-Q-network. Also created and compared the performance of agents created using variants of DQN like Double-DQN and Dueling-DQN on the same games with DQN.

Bots for Cartpole and Inverted Pendulum using Policy Gradients
Dr.Girish Varma *Dec-Jan'17*
Created an intelligent agent that could balance the pole in the Cartpole environment in OpenAI gym for at least 3000 of time steps using off-policy Advantage-Actor-critic method. Also created an agent that could play in the continuous-action space game of Inverted Pendulum using Deep-Deterministic Policy gradients(DDPG).

Segmenting Placido Rings from Corneal Images
Koteswara Rao Chilakala, Ananya Uberoi *May-May'16*
Segmented out placido rings from images of human cornea captured by a hand-held corneal topographer by blurring followed by adaptive thresholding and morphological opening to produce disjoint rings.Broken rings were interpolated using Espinosa's elliptical scanning algorithm.

Course Projects

Poisson Image Blending
Dr.Vineet Gandhi Monsoon'16
Created tools that allow the seamless importation of both opaque and transparent source image regions into a destination region, seamless tiling, texture-flattening and illumination changes of image-regions using Poisson image blending.

File Transfer Protocol Implementation
Dr.Ganesh Iyer Spring'16
Created an application level file sharing protocol with support for download and upload for files and indexed searching.It also allows the user to choose between TCP and UDP for transfer of files between the shared folders, check for any changes made to the shared folders,uses MD5 checksum to handle file transfer errors.

Decaf Compiler
Dr.Govindarajulu Monsoon'16
Implemented a front-end compiler for a subset of the C language. Generated LLVM intermediate representation for the same. Used flex(for tokens), bison(for grammar) and C++ for implementation.

Ultimate Tic-Tac-Toe
Dr.Praveen Paruchuri Spring'16
Created an Intelligent rational decision-maker which takes the best possible decision while playing Tic-Tac-Toe. Used Artificial Intelligence Concepts like Adversial Search,Mini-Max and Alpha-Beta Pruning to do this.

Mini Bash Shell
Dr.Suresh Purini Monsoon'16
Implemented the bash shell commands in C. Includes background processes, redirection, I/O and some userdefined commands. Only system calls were used.

Technical Skills

- **Languages:** C,C++,Python,MATLAB
- **Frameworks:** PyTorch,Tensorflow,Keras(Basic)

Relevant Courses (*-Pursuing)

Machine Learning(A-),Statistical Methods in Artificial Intelligence(A), Optimization Methods (B), Artificial Intelligence(B-), Digital Image Processing(A-), Digital Signal Analysis and Application(B), Database Systems*,Principles of Information security*,Data Structures(B), Algorithms(B).