Graduate Student
MS in Computer Science
Stony Brook University, NY

HARSHIT

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Education

M. S. Computer Science, Stony Brook University, New York [2019-Dec 20]

- *Distributed Systems, Analysis of Algorithms, Computer Vision, Big Data, Visualization, Artificial Intelligence*

B. Tech. Computer Science and Engineering, Indian Institute of Technology, Patna, India, CPI: 8.84/10 [2013-17]

- *Operating Systems, Computer Networks, Object-oriented Programming, Deep Learning, Algorithms, Data Structures*

Skills and Technologies

Java(*Spring,Hibernate*); Python(*PyTorch,Tensorflow,Opencv,Django,Flask*); Go; Spark; C; C++; BASH; Kernel Programming; Network programming; JavaScript(*D3,jQuery,Chart*); MySQL; RaspberryPi; Arduino; Latex; HTML; CSS; Linux

Work Experience

Engineer I **Samsung R&D | SRI-Delhi** *2017-2019*

- **OPERATING TIME PERFORMANCE** for Samsung VD:- development of software to analyze OS performances, reducing work load from weeks to days, using deep-learning and Computer Vision [Python (Tensorflow, OpenCV)]
- **PRODUCT INTELLIGENCE** :- generated statistics and analytics influencing proactive product decisions; monitoring timelines of various products via Machine Learning models. [Python(lightgbm, sklearn), Java-Spring, Splunk]
- Setup of **MEMORY and PERFORMANCE TASK FORCE** for profiling Tizen OS kernel ensuring stable software. [Bash, C, C++, Python,

Research Internship **Nanyang Technological University, Singapore** *Summer 2016*

- Worked at HESL Lab under Prof Vinod Prasad, deployed to propose and verify **authentication using EEG bio metrics** . Collected and preprocessed EEG responses[using EMOTIV Epoc headset] on audio and visual stimuli.[C#, MATLAB]
- Implemented the authentication system, achieving 80% accuracy. Published at IECBES 2016. https://bit.ly/2m2WKII

- Graduate Teaching Assistant, Data Structures (CSE214) Fall '19, Benevolent Computing (ISE339) Spring '20 , **Stony Brook University**, New York

- Research Internship, CNeRG lab, under Prof Niloy Ganguly**, IIT Kharagpur**, India [Summer 2015]

Conference Publications

- Online Electroencephalogram (EEG) based biometric authentication using visual and audio stimuli, IECBES 2016

- Road Congestion Sensing via Crowdsourcing and MapReduce, IPSN 2015. https://bit.ly/2kQQP9B

Projects

Robust UAV Object Tracking (2020 - Present) *OpenCV, PyTorch*

- Working on largest Single Object Tracking Dataset, **LaSOT**. This new dataset is already being used as a standard for benchmarking. https://bit.ly/2S0z6du
- As a part of Masters project, to train an online **tracking algorithm** for tracking objects using UAV.

Sharded Replicated KeyValue Store (2019) *Go*

- Implemented a key value store replicated across multiple machines with **RAFT consensus** for fault tolerance.
- The system also used sharding and snapshots for performance. Additionaly implemented a **MapReduce** library.

Copter QL: The Q-Learning Helicopter Game (2019) *Deep-learning[Tensorflow], Pygame*

- Aimed to make agent learn to play copter using **deep reinforcement learning** techniques. Implemented a Deep QNetwork (DQN) for learning Q-values for approximate state-action pairs.
- Agent balanced exploration and exploitation using experience replay and update delay, achieving the best strategy to score after 3000 attempts at gameplay. https://bit.ly/2m1FWlo

Chord: Distributed Hash Table (2016) *Java (javafx)*

- Implement a peer to peer distributed hash table simulator using chord protocol and algorithm.
- Chord adapts efficiently as new keys join or leave the system, and can answer queries even if the system is continuously changing.

Pintos: Operating System (2016) *C; Bash; Qemu*

- OS courswork project. Used Pintos OS available from Stanford and on Qemu VM emulator. Implemented **schedulling algorithms** such as FCFS, priority schedulling. To extend memory, completed **virtual memory** library. Used **semaphores and locks** for synchronization tasks.
- Modified **file system** to allow directory entries to point to files or to other directories.

Lecture Assistant (2016) *Python[Flask,OpenCV], RPi, Arduino*

- Developed an IoT based device to track the lecturer, and record a video lecture.
- A camera set over a servo motor which was controlled via a Raspberry Pi (or Arduino). The camera rotates towards the moving lecturer and streams its frames over the server.
- The server has a webpage where students can discuss doubts and take quizzes related to the topic. https://bit.ly/2lJ3ZWK

Other Experiences And Achievements

- Google Kickstart '19 Round H **[Rank 405]; Competition Expert @ Kaggle** [Currently ranked - 3547]

- **Bronze medal** in IoT Innovation at Inter-IIT tech meet (2016). Runner-up in **IEEE ISED Grand Challenge** December 2016.