

Graduate Student
MS in Computer Science 2019-21
Stony Brook University, NY

HARSHIT

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Areas Of Interests

Computer Vision, Distributed Systems, Machine Learning(Q-Learning), Data Science(Kaggle)

Education

- M. S. Computer Science, Stony Brook University, New York [2019-21]
- *Computer Vision, Big Data, Distributed Systems, Visualization, Analysis of Algorithms, AI*
- B. Tech. Computer Science and Engineering, Indian Institute of Technology, Patna, India, CPI: 8.84/10 [2013-17]
- *Deep Learning, Network Science, Algorithms, Data Structures, Object-oriented Programming, Operating Systems*

Skills and Technologies

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

Work Experience

- Engineer I** **Samsung Research | 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 ensuring stable software. [C++, Python, Jenkins]
- 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, CS - Stonybrook 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 Online 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 single shot learning algorithm for object tracking like SiamNET, ATOM, etc.
- 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. Done as a part of in-course project in Distributed Systems.
- 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/2m1FWIo>
- Adaptive Object Tracking (2016-17)** **Python, OpenCV**
- Implemented a pedestrian tracker using HoG and condensation algorithm as bachelors final year project. [Top 6 out of 55 students].
- Accuracy around 90% on PET 2009 dataset. The system can also track a person through various cameras in surveillance system.
- Centrality Metrics in Dynamic Networks (2017)** **Python, Bash**
- A new hybrid centrality metric is proposed, consisting of PageRank, average importance over time & aging factor.
- Citations network is used as the dataset. Metrics obtained corresponding to important publications in the course of time were obtained as desirable.
- 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/2UJ3ZWK>

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). Second in IEEE ISD Grand Challenge December 2016.
- General Secretary Cultural Affairs, Student Gymkhana, & B. Tech. Senior Year General Secretary, IITP (2016-17)