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; GPA: 3.87/4.0   [2019-Dec 20]
   - *Computer Vision, Big Data, Distributed Systems, Visualization, Probability and Statistics, Analysis of Algorithms*

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

Languages and tools: *Java; Python; MySQL; Go; Spark; C; C++; JavaScript; HTML; CSS; RaspberryPi; Arduino; Latex; Linux*
Frameworks: Py*spark; HDFS; Google Cloud; Spring, Hibernate; D3.js; Flask; Django; React Native; PyTorch; Tensorflow; OpenCV*

Work Experience

ML Engineer Intern   **VisioLab**   *Summer 2020 [Current]*
   - Develop object recognition pipeline using One-Shot Learning; Similarity/Metric Learning via DNN [Python; PyTorch; Tensorflow]
   - Implement APIs for Active Learning on Cloud with iOS interface for onboarding.
   - Deploy models on iOS [Swift; CoreML]

Engineer I   **Samsung R&D**   *2017-2019*
   - OPERATING TIME PERFORMANCE for Samsung VD:- develop toolkit to analyze OS performances, reducing work load from weeks to days, using deep learning and Computer Vision [Python (Tensorflow, OpenCV)]
   - PRODUCT INTELLIGENCE:- generate 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*
   - Collected and processed 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), Benevolent Computing (ISE339), **Stony Brook University**, NY, US
- 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

Mining School Surveys for Quality Education (2020)   *PySpark; HDFS; Tensorflow*
   - Conducted Multi-Hypothesis test, to find significance of feedback information (20 GB survey data)
   - Found clusters of area codes based on feedbacks via **Locality Sensitive Hashing** using Spark+HDFS. Train models on feedbacks.
   - Cross nation area codes belonged to same clusters with Jaccard Similarity of 0.80. https://bit.ly/3d0CrS9

Covid-19 Vizualization (2020)   *D3.js; Flask; Bootstrap; jQuery*
   - Developed a dashboard with Map visualization to show COVID-19 statistics for each country using color-maps. https://bit.ly/2zlkZJw
   - Used parallel coordinate and radar chart to show trends between health expenses, population density and covid-19 stats.

Robust UAV Object Tracking (2020 - Present)   *Python; PyTorch*
   - Worked on largest Single Object Tracking Dataset, **LaSOT,** used as a standard for benchmarking. https://bit.ly/2S0z6du
   - As a part of Masters project, developing an online tracking algorithm for tracking objects using UAV.
   - Fine-tune network layers (region proposals, feature pyramids, fully convolutional) to improve tracking AUC for UAV sequences.

Sharded Replicated KeyValue Store (2019)   *Go*
   - Implemented a scalable 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/2AK4qqO

Chord: Distributed Hash Table (2016)   *Java*
   - Implemented a peer to peer distributed hash table simulator using chord protocol and algorithm.
   - Chord adapts efficiently as new keys join, and can read/write in sublinear time efficiently.

Other Experiences And Achievements

   - **Google** Kickstart '20 Round B **[Rank 430]** Hashcode '20 **[US Rank 90]; 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.