

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: **Pyspark**; **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 [PyTorch; Tensorflow]
- 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*
- 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 Fall '19, Benevolent Computing 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

- Mining School Surveys for Quality Education (2020)** *PySpark; HDFS; Tensorflow*
- Conducted **Multi-Hypothesis test**, to find significance of feedback information from students (20 GB 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.