

Graduate Student  
MS in Computer Science  
Stony Brook University, NY

# HARSHIT

Passionate developer, aspiring to work on infrastructure, systems and apps  
using Containers, Kubernetes. LinkedIn: <https://bit.ly/2B8UvLT>

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## Education

- M. S. Computer Science, Stony Brook University, New York; GPA: 3.87/4.0 [2019-Dec 20]  
- Distributed Systems, Big Data, Computer Vision, 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]  
- Operating Systems, Deep Learning, Network Science, Algorithms, Data Structures, Object-oriented Programming

## Skills and Technologies

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

## Work Experience

- SWE Intern - Machine Learning** **VisioLab** *Summer 2020*  
- Develop object recognition pipeline using One-Shot Learning; Similarity/Metric Learning via DNN [Python; PyTorch]  
- Create feature extractor library and docker app for active learning on cloud and batch training.  
- Implement APIs to deploy models to iOS client and onboard data from client. [GCP Storage, Python, 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:- maintain video search API; generate statistics and analytics influencing proactive product decisions; monitoring timelines of various products via Machine Learning models. [Java-Spring-SOLR, Python(lightgbm, sklearn), 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>
- Robust UAV Object Tracking (2020 - Present) [Masters project]** *OpenCV, PyTorch*  
- As a part of Masters project, developing an online tracking algorithm for tracking objects through UAV video sequences.  
- Implement template update for online tracker via alignment matching and updateNet for higher accuracies.  
- Worked on largest Single Object Tracking Dataset, LaSOT, used as a standard for benchmarking. <https://bit.ly/2S0z6du>
- Sharded Replicated KeyValue Store (2019)** *Go, Distributed Systems*  
- 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 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/2AK4qqQ>
- Chord: Distributed Hash Table (2016)** *Java (javafx)*  
- Implement a peer to peer distributed hash table using chord protocol and algorithm.  
- Chord adapts efficiently as new keys join the system, and can answer queries even if the system is continuously changing.
- Pintos: Operating System (2016)** *C; Bash; Qemu*  
- OS coursework project. Used Pintos OS available from Stanford and on Qemu VM emulator. Implemented FCFS, priority scheduling algorithm. Completed virtual memory library. Used semaphores and locks for synchronization tasks.  
- Modified file system to allow directory entries to point (links) to files or to other directories.

## 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 ISGD Grand Challenge** December 2016.