

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, Databases, Algorithms, Data Structures, Object-oriented Programming

## Skills and Technologies

Languages and tools: Java; Go; Python; 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  
- Reduced training time by 5x using cloud resources and set-up train-cycle with the world largest food caterer Aramark.  
- Implement and dockerize modules (to deploy on Kubernetes cluster) to train, deploy and onboard data/models from/to client.  
- Implement library for feature extractor training on cloud GPUs. [Docker, Google Cloud Storage, Flask; Python; PyTorch; CoreML]
- Software Engineer** **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, Splunk]  
- VERTICAL OPTIMIZATION of memory and performance issues for Samsung TVs ensuring stable software released. [C, C++]
- 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), UI Development (CSE333) **Stony Brook University**

## Selected Publications

- LaSOT: A High-quality Large-scale Single Object Tracking Benchmark, IJCV 2020. <https://bit.ly/3kAAKhA>  
- Road Congestion Sensing via Crowdsourcing and MapReduce, IPSN 2015. <https://bit.ly/2kQP9B>

## Projects

- Mining School Surveys for Quality Education** 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>
- Sharded Replicated Key/Value Store** 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.
- Chord: Distributed Hash Table** 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** 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.
- Robust UAV Object Tracking [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>
- Copter QL: The Q-Learning Helicopter Game** 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/2AK4qqO>

## Other Experiences And Achievements

- Google Kickstart '20 Round B [Rank 430/10k] Hashcode '20 [US Rank 90]; Competition Expert @ Kaggle [97 percentile]  
- Bronze medal in IoT Innovation at Inter-IIT tech meet (2016). Runner-up in IEEE ISGD Grand Challenge December 2016.