Tejas Shivanand Mane

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Education

- **University of Pennsylvania** — Philadelphia, U.S.A
  Master of Science in Scientific Computing — *May 2020*
- **Birla Institute of Technology and Science (BITS)** — Pilani, India
  Bachelor of Engineering in Mechanical Engineering — *July. 2017*

Graduate Coursework

Machine Learning, Operating Systems, Databases and Information Systems, Algorithms and Computation, Internet and Web Systems, Big Data Analytics, Biomedical Image Analysis.

Technical Skills

- **Languages**: Python, C/C++, Java, HTML/Javascript
- **Tools and Technology**: Linux, Spark, Git, AngularJS, NodeJS, MySQL, MongoDB, Neo4j, Matlab

Work Experience

- **Computer Vision/ML Intern, Characterfacegen by Vidalign Inc** (May 2019 - August 2019):
  - Optimized the main 3DMM algorithm, using parallelism (OpenMP) to increase the processing speed from 1 fps to 6 fps. Used optical flow to stabilize generated 3D morphable model's output using OpenCV libraries.
  - Wrote code to extract spherical harmonic lighting information and pure color texture from baked texture containing shadow/illumination. Skills: C++, OpenMP, Python, Tensorflow, OpenCV.
- **Graduate Research Assistant, University of Pennsylvania** (Jan 2019 - Present):
  - Currently working under Dr. Elena Bernardis, developing machine learning algorithms to visualize and apply 2D image hair segmentation masks onto 3D meshes with a tailored geometrical structure, using a video as input. Skills: Python, Keras, Tensorflow, OpenCV.
- **Junior Research Fellow, IIT Gandhinagar** (July 2017 - July 2018):
  - Worked as a Junior Research fellow, on a research project to understand heat transfer occurring during combustion of nano aluminum particles. (Publication Links: Link 1, Link 2, Link 3) Skills: Python, MATLAB, Inkscape.
- **Research Intern, Quazar Technologies** (Jan 2017 - June 2017):
  - Successfully completed the Particle in Cell code in python (1000+ lines) using Arrayfire's high performance libraries, to model the Vlasov-Maxwell system of partial differential equations which are used to study collisionless plasmas. (Link). Skills: Python, Arrayfire.

Selected Projects

- **Search Engine** October 2019 - December 2019
  - Worked in a team of 2, developing a cloud based distributed search engine in **java**, comprising of a Crawler (Over 1 Million documents crawled), PageRank and UI, using technologies such as **AWS EC2**, **S3**, **Map Reduce**, **Spark** and **Berkeley DB**.
- **Web Application for SAT Score Prediction/Analysis** February 2019 - April 2019
  - Built a full stack project in a team of 4, using **AngularJS**, **NodeJS** and **Bootstrap**. An **AWS RDS** database was populated by scrapping SAT scores related data from the web. **MySQL** and **NoSql** (**MongoDB**) was used with query optimization and caching (Link).
- **Penn OS** March 2019 - April 2019
  - Worked on building an operating system simulator on **Linux** with components such as preemptive priority scheduler and a file system, in **C**, primarily dealing with the file system component for the operating system.
- **Sentiment Analysis using Deep Learning** October 2018 - December 2018
  - Developed machine learning models to detect insincere questions using the Quora dataset available on Kaggle.
  - Applied models such as Random Forest, CNN and LSTM using **Keras** and **Sklearn** to achieve an f1 score of over 0.65 on the test data set.
- **Semantic Image Segmentation using Deep Learning** September 2018 - December 2018
  - Led a team of 3 to train deep learning models such as **cGANs** and **U-Net** to achieve $\sim 90\%$ segmentation accuracy on the test data set based on Alopecia areata (Hair Loss).