Tanay Varshney

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EDUCATION

New York University — **New York, USA**
Master of Science in Computer Science. — *August 2018 – May 2020*
University of Mumbai — **Mumbai, India**
Bachelor of Technology in Computer Engineering — *August 2014 – June 2018*

SKILLS

- **Machine Learning** – Tensorflow, PyTorch, Keras, Sckit-learn.
- **Computer Vision**: OpenCV, STL, Trimesh, opengl, MATLAB, C++
- **Analytics** – Python, R, Excel, Tableau, Spark, kafka, numpy, pandas, SQL, matplotlib, plotly. MongoDB, SQLite, Oracle Suite
- **Misc**: JavaScript, D3.js, Chart.js, Node.js, Azure DataBricks, ArcGIS, RaspberryPi, APM

EXPERIENCE

New York University, Tandon School of Engineering — **New York, USA**
Research Assistant — *February 2019 –Present*

- Working on **3D point cloud generation**, **scaling data** collection, processing and analysis to manage **over 100GB** of image/3D and statistical data by building multithreaded systems and employing big data platforms.
- Working on Roof health prediction for over **70,000 structures** using remote sensing data
- Built a **pose and location** estimating model to aid visually impaired to navigate a plaza (NYC DoT)

New York University, Robert F. Wagner Graduate School of Public Service — **New York, USA**
Research Assistant — *October 2018 – May 2019*

- Mapped water sheds with **remote sensing data** and **spectral imagery** using 4 spectral bands with 90% + accuracy
- Designed a clustering model to categorize different sets of irrigation canals by **feature engineering 70+ features**.

Indian Space Research Organization — **Mumbai, India**
Machine Learning Intern. — *March 2018 – July 2018*

- Designed a **hybrid algorithm** for image **acquisition and analysis** by multiple **UAVs** (8 – 10) in **swarm formation** for Digital Elevation Map generation, re-mapping success rates by above 90%.
- Built **Image Stitching Engine**, 2D & 3D simulations, module to identify objects and scenes.
- Built **CNN based classifiers** using Tensorflow for Garbage, Pothole and Road detection with an accuracy of 92%.

General Motors — **Bangalore, India**
Machine Learning Intern — *June 2017 – July 2017*

- Worked with **L2 Automation** for **autonomous vehicles** with accuracy above 95% using MATLAB and PyTorch
- Trained over 10 professionals for PyTorch, Python and Machine Learning techstacks

Parallax Labs LLP — **Mumbai, India**
Data Analytics Intern — *October 2016 – February 2017*

- Designed a **real time data** production line **analytics** MR platform with latency less than 2 seconds using d3.js, R and unity.

PROJECTS

Unsupervised/Semi-supervised Semantic Segmentation (Master's Thesis)

- Building a model to perform **Unsupervised/Semi-supervised Semantic Segmentation** on Images/Point Clouds.

Autonomous Swarm Drones (Bachelor's Thesis)

- Built a **De-centralized swarm of autonomous drones** (simulation) to form shapes.
- Built a **closed loop** platform(simulation) using camera and sensor data fusion for obstacle avoidance and localization
- Build **mobile app and video analytics platform** for personal assistant capabilities.

Quadcopter Localization using Sensor Fusion

- Used **optical flow**, **Vicon** and **IMU data**, to compute quadcopter velocity and APRIL tag to compute POSE **(Sensor Fusion)**.
- Performed localization using **Extended Kalman Filter** to build flight paths at 25 hz

RealCity3D

- Working on **3D point cloud and mesh generation** and from remote sensing data.
- Scaling data collection, processing and analysis to manage mesh and point cloud data by building multi threaded systems and employing big data platforms. (Extended Abstract has been accepted by **CVPR**)