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**)