

# ADITYA WAGH

<https://adityamwagh.me>

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Machine Learning Engineer



## EDUCATION

- **New York University** Sep '21 – May '23  
*MS in Electrical Engineering (Machine Learning & Robotics Specialization); GPA: 3.5/4*  
**Coursework:** Deep Learning, Distributed Deep Learning, Probability & Stochastic Processes, Robot Perception, Robot Localisation, Foundations of Robotics, Digital Signal Processing
- **Birla Institute of Technology and Science (BITS), Pilani** Aug '15 – May '19  
*B.Eng in Electronics Engineering*

## EXPERIENCE

- **AI4CE Lab at New York University** Sep '22 – Present  
*Graduate Research Assistant*
  - Developing Transformer and Graph NN based semi-supervised and unsupervised models to improve **pair-wise registration of LiDAR point cloud with a low overlap ratio**
  - Experimented with fully-convolutional and attention based **outlier rejection** techniques to find the overlapping region between two point clouds
- **Central Electronics Engineering Research Institute** Jul '18 – Dec '18  
*Deep Learning Intern*
  - Developed a **deep learning** based **object detection** model to detect power cables in aerial images.
  - Fine-tuned a Mask-RCNN semantic segmentation model to identify power cables on this new dataset and achieved a test accuracy of approximately 85%
- **New York University** Sep '22 – Dec '22  
*Graduate Teaching Assistant*
  - Co-taught the ROB-GY 6203 Robot Perception course – a graduate level course on **3D Computer Vision**.
  - Designed and graded homeworks, coding assignments and exams.

## PROJECTS

- **Data Science Jobs Analysis** Python, Sklearn, SciPy
  - **Scraped** over 16k data science job descriptions from LinkedIn and Glassdoor and aggregated 3 yrs of data from Kaggle's annual data science survey.
  - Performed **Exploratory Data Analysis** and **Hypothesis Testing** to find job roles that earn the highest salary, and the skills and level of education necessary to break into these roles.
  - Achieved a top-2 accuracy of 80% for job title **classification** using LightGBM.
  - Performed salary prediction based on individuals' experience and skillsets using Ridge, Lasso, XGBoost and Generalized Linear **Regression** models, achieving an R2 score of 0.4.
  - **Clustered** respondents using k-means and k-prototypes algorithms, and interpreted the resulting clusters.
- **Post-Earthquake Damage Assessment using Fully Convolutional Networks** Keras, Tensorflow 
  - Designed fully convolutional **neural networks** for **multi-task semantic segmentation** of building components and their damage state using a **shared backbone and multiple heads**
  - Achieved a mAP of 97% over 5 component classes and mAP of 70% for 5 damage state classes
- **Visual Place Recognition using Bag of Visual Words** OpenCV, Sklearn 
  - Developed a **visual re-localisation & loop-closure** tool to identify a previously visited location from a database of images of visited location.
  - Used **Scale-invariant feature transform (SIFT)** to extract features, **k-means clustering** algorithm to generate visual words, **TF-IDF** to improve robustness, and **k-nearest neighbours (kNN) ML algorithm** to find matching images using these visual words.

## TECHNICAL SKILLS

Python, C/C++, SQL, CUDA, PyTorch, Keras, TensorFlow, OpenCV, Open3D, Bash, Rust, MATLAB, Scikit-learn, Pandas, Kornia, NumPy, CMake, Git, Linux Docker, AWS, SLURM

## LEADERSHIP

- **Vice-Chairperson - IEEE Student Chapter, BITS Pilani:** Organized IEEE-affiliated technical events and workshops, set up the chapter's website, and authored the first issue of IEEE Insight newsletter.
- **Member of Governing Council, Society for Student Dining Services, BITS Pilani:** Involved in the Health and HR committee, overseeing fund allocation, worker leaves and feedback management, and internal worker conflict resolution.