

# Ankush Pratap Singh

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## EDUCATION

### New York University

Master of Science in Computer Engineering - CGPA: **3.867/4.0**

New York, USA

Sep 2021 - May 2023

### Netaji Subhas Institute of Technology

Bachelor of Engineering in Instrumentation and Control - CGPA: **3.60/4.0**

Delhi, INDIA

Aug 2013 – June 2017

## TECHNICAL SKILLS AND COURSEWORK

**Technical Skills:** Data Science, Analytics, Visualization, Machine Learning, Deep Learning, Computer Vision, Software Development  
**Programming and Frameworks:** Python, C, C++, SQL, Git, Numpy, Pandas, Matplotlib, Seaborn, Pytorch, Sklearn (Scikit-learn), Scipy, OpenCV, Monai, Pyspark, Hadoop, Recommender Systems, Django, Kafka, Rest APIs, Redis, Crontab, MySQL, MongoDB  
**Relevant Coursework:** Artificial Intelligence, Machine Learning, Deep Learning, Robotic Perception, Machine Learning for Cybersecurity, Probability and Stochastic Processes, Big Data

## PROFESSIONAL EXPERIENCE

### Research Internship – Ai4CE Lab New York University

New York, USA

Project: Scene Summarization (Paper Under Review CVPR 2024)

Sept 2022– Oct 2023

- Developed a self-supervised, contrastive learning based method to distill a large collection of images (scene) into a small set of representative images, emphasizing spatial diversity.
- Conducted a comparative analysis of this approach with established video summarization techniques, using Habitat and Kitty datasets.
- Contributed to research through data collection, analysis, post-processing, training deep learning models, debugging, and drafting the research paper.

### Graduate Course Assistant – New York University

New York, USA

Courses: Advanced Machine Learning, Introduction to Machine Learning, Real-Time Embedded Systems

Feb 2022– May 2023

- Prepared course content and graded homework and exams for over 200 students.
- Led coding and debugging sessions to clarify doubts. Monitored students on their course projects.

### Software Engineer – GO-MMT Goibibo Group

Gurgaon, India

Technologies Used: Python, Django, Kafka, Rest APIs, Redis, Crontab, MongoDB, SEO, Git

Jan 2019– Apr 2021

- Worked as a full stack developer on the hotel vertical which required reading hotel objects through Kafka, modifying and storing objects in MongoDB, and maintaining hotel data from different vendors (achieved nearly 100%). Improved the hotel search results page's image selection and processing criteria. Increased hotel image visibility from 78% to 97%.
- Collaborated with multiple stakeholders to understand their needs, and developed APIs and dashboards for front-end, mobile app, and marketing teams.
- Developed domestic and international destination verticals from scratch. Handled train and bus booking platforms and improved overall SEO rankings for hotels, trains, buses, and destinations.

### Software Engineer – Bhavna Software India Pvt. Ltd

Noida, India

Technologies Used: Angular 2, Typescript, C#, .Net, SQL, Git

Jun 2017 – May 2018

- Worked as a full-stack developer on different tasks related to lease modules, including Create, Read, Update, Delete (CRUD) tasks, imports, exports, and maintenance of lease records.

## ACADEMIC AND RESEARCH PROJECTS

### Segmenting Metastatic Brain Tumor Using Deep Learning (M.S. Thesis) – NYU Video Lab

Sep 2022 - May 2023

- Analyzed and trained deep neural networks for cancer segmentation using the NYUMets dataset.
- Introduced segmentation through time, LSTM based UNet and Transformer based UNet architectures to capture temporal information in the dataset.
- Compared different architectures based on Dice Score, Hausdorff distance, tumor volume and count, IoU per class, and F-beta.

### MuGAN – Generating Adversarial Modified Music – NYU Machine Learning for Cybersecurity

Sep 2022 - Dec 2022

- Developed a GAN-based neural network to generate novel music of a particular genre or modify existing music to a new genre.

### Backdoor Attack Detector for BadNets – NYU Machine Learning for Cybersecurity

Sep 2022 - Dec 2022

- A backdoor attack detector was designed and developed specifically for BadNets that were trained on the YouTube face dataset. The detector utilized pruning defense, which involves removing a small portion of the network's parameters to increase its robustness against adversarial attacks. The detector was effective in reducing the success rate of the attacks by 24%.

### Recommender System – NYU Big Data

Jan 2022 - May 2022

- Developed and trained a Recommender System on the MovieLens dataset using Popularity and later Collaborative Filtering methods, significantly improving metrics such as precision, NDCG, and Catalog coverage.
- Conducted benchmarking to compare single-machine and cluster-based execution, resulting in a reduction of model fitting time by 20.6% and accuracy calculation time by 30.1%.