Ankush Pratap Singh

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EDUCATION

New York University — **New York, USA**
Master of Science in Computer Engineering - CGPA: **3.867/4.0** — *Sep 2021 - May 2023*
Netaji Subhas Institute of Technology — **Delhi, INDIA**
Bachelor of Engineering in Instrumentation and Control - CGPA: **3.60/4.0** — *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 — *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 Kitti 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%.