

SUMANYU MUKU

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EDUCATION

New York University

Masters, Computer Science

Coursework: Deep Reinforcement Learning, Natural Language Processing

September 2021 - May 2023

New York City, NY, USA

Delhi Technological University(DTU)

Bachelor of Technology, Computer Science

Coursework: Data Structures, Algorithms, Operating Systems, OOPS, DBMS

August 2016 - May 2020

New Delhi, India

8.13/10.0

TECHNICAL SKILLS

Languages: C/C++, Python, Java, Julia, R, SQL, Bash

DBMS: MySQL, Oracle SQL, MongoDB, PostgreSQL, Cassandra

Frameworks: AWS, Docker, Kubernetes, Git, Jenkins, Hadoop, Spark

Other Tools: Pytorch, Tensorflow, Keras, Numpy, Pandas, OpenCV, NLTK, Matplotlib, Seaborn, OpenAI-Gym

WORK EXPERIENCE

Research Assistant, NYU Langone Health

November 2021 - Present

Currently working with Prof. [Sumit Chopra](#) and Prof. [Rajesh Ranganath](#) in the intersection of machine learning and healthcare. Specifically, we are trying to reduce the TRT in MRI diagnosis by analyzing undersampled k-space data.

Research Engineer, Computer Vision Group, IIT Delhi

June 2020 - August 2021

Devised an Attention based framework for assisting a radiologist in detecting Covid-19. Also, conducted work in the area of data curation techniques for mitigating representational bias.

Research Intern, Social Computing Lab, IIIT Delhi

February 2019 - April 2020

Analyzed Adversarial Attacks for image classification tasks in black-box setting. Developed a black-box adversarial patch attack (**BB-Patch**) by using ZO-AdaMM ([NeurIPS 2019](#)) to optimize Expectation Over Transformation (EOT) and demonstrated its effects in the distracted driving setting.

Summer Intern, ITARD, IIIT Hyderabad

May 2019 - August 2019

Developed a novel clustering based Question Answering Model for fine grained image classification. The results of this work were used to refine the crop advisory tool, [Crop Darpan](#).

PUBLICATIONS

[Does Data Repair Lead to Fair Models? Curating Contextually Fair Data To Reduce Model Bias](#) - *IEEE*

Winter Conference on Applications of Computer Vision (WACV) 2022 (h-index=62)

[Artificial Intelligence-Assisted Chest X-Ray Assessment Scheme for COVID-19](#) - *European Radiology 2021*

[A Survey of Black-Box Adversarial Attacks on Computer Vision Models](#) - *ArXiv*

PROJECTS

RLCar (Bachelor Thesis)

Proposed a RL based framework *RLCar* for simulating Page Caching in operating systems. Demonstrated the effectiveness of using model free RL algorithms like SARSA, Q-learning over LRU, LFU or CLOCK for maximizing the cache-hit ratio.

Active Learning for Tumor Detection

Implemented popular baselines like Coreset, Max-Entropy, MC-Dropout for Single Class (Malignant/Benign) Active Learning using Faster-RCNN model. The algorithms were compared by doing a FROC analysis at different selection budgets.

Small Tumor Detection

Used TinyFaces Detector ([CVPR 2017](#)) for small lesion detection in full 4K resolution mammographic scans. This simple experimental setup surpassed SOTA breast-lesion detectors where image scaling obfuscated the lesion context.

TEACHING EXPERIENCE

Introduction to Data Science (DS-GA 1001)

September 2021 - December 2021

Lead lab sessions, designed assignments and quizzes and held office hours for covering doubts and providing feedback to students.

Introduction to Machine Learning (CSCI-UA 473)

January 2022 - May 2022

Designing the lecture component, grading homework and mentoring a class of **180+** students.