

Astha Gupta

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EDUCATION

NYU Courant Institute of Mathematical Sciences, NYC

Masters of Science, Computer Science

Jan 2021 (current)

Expected Graduation: Dec 2022

SRM Institute of Science and Technology, India

Bachelor of Technology, Computer Science and Engineering

July 2016- May 2020

GPA: 9.2/10.0

SKILLS

- **Software Engineering:** Python, C++, C, Java, SQL, HTML, CSS, JavaScript.
- **Computer Vision/ Deep Learning:** OpenCV, NumPy, Keras, TensorFlow, Pytorch, Scikit Learn, Matplotlib, Pandas.

WORK EXPERIENCE

Research Intern, Harvard Medical School

January 2020 –July 2020, Cambridge MA

- Worked with [Dr. Shiladitya Sengupta](#) at [Center of Engineered Therapeutics](#), on Object Detection architectures such as Faster-RCNN and YOLO for determining the severity of acne lesions.
- Worked with Dr. Shiladitya Sengupta to review state-of-the-art patient survival score prediction models and analyse the MIMIC dataset to be used for creating a prediction model for patient survival chances after they are placed on ECMO.
- Worked with Dr. Bumseok Namgung to improve the quality of microscopic images after deconvolution using super resolution-based techniques.
- Revamped the lab website to offer an updated platform.

Academic Intern, National University of Singapore

June 2018 - July 2018, Singapore

- Trained under HPE professions in the field of Big Data Analytics.
- Worked on a project to analyse movie data using Hadoop and Hive.
- Worked on a CNN-based project to develop an early disease detection model for patients with cardio-vascular rhythmic irregularities.

PROJECTS

- **Two-Pass Linker:** Implementation of a two-pass linker in C++ for a target machine that is word addressable with a memory of 512 words, each consisting of integers (<10000). The purpose of the program is to relocate external addresses and resolve external differences using a tokenizer and a parser. The program accepts an input consisting of a series of modules wherein each is divided into definitions, use cases and the program text, and outputs a linked version of the modules with absolute addresses for the symbols as well as adjustments of the program text.
- **Process Scheduler:** Implementation of a Discrete Event Simulation-based scheduling system in C++ which implements the First Come First Serve, Last Come First Serve, Shortest Remaining Time First, Round Robin, Priority and Preemptive Priority scheduling algorithms.
- **Auto-ML based pipeline for deep learning tasks:** Implementation of an end-to-end AutoML pipeline using the underlying concepts of HML Opt and Differentiable Architecture Search (DARTS). The system that takes in raw data as input and uses a probabilistic machine learning algorithm to determine the best deep learning model parameters for that task. Maximum accuracy reached for CIFAR-10 was 90% in under 90 minutes.
- **Heartsounds Classifier:** Built a scalable system to classify heartbeat sounds into one of four sub-categories to detect the presence of any abnormality. The model utilises the pre-existing Librosa library to convert sounds into spectrographs and image classification is performed on the results obtained. Tested on a Physionet dataset, the model achieved an accuracy of 90.62%.
- **Classification of Lesion Images Using Transfer Learning Approach:** Fine Tuned pre-trained ResNet50 and VGG16 models to assess their transferability to a skin lesion dataset. The system could be deployed as a potential screening test for early disease detection in places where access to healthcare is severely limited. The ISIC-challenge dataset was pre-processed and the model achieved a test accuracy of 87.7% and an AUROC of 0.95. Also worked on a web interface for the same.