Raunak Sood

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Education

B.S, Carnegie Mellon University *August 2021 - Present*

Electrical and Computer Engineering, **GPA: 4.0**

- Relevant courses: Intro to Machine Learning (Graduate), Intro to Deep Learning, Parallel and Sequential Data Structures and Algorithms, Intro to Computer Systems, Great Ideas in Theoretical CS, Principles of Functional Programming, Statistical Inference, Signals and Systems
- **IEEE Eta-Kappa-Nu (HKN)** Member: *Spring 2023 - Present*
- **Dean's List**: *Fall 2021 - Present*

Experience

Software Engineering Intern, Optum *June 2023 - August 2023*

- Worked on automating the process of connecting acquired companies to the Optum network securely. Helped build an interface that automatically populates rack diagrams from integration documents. Utilized Python socket programming to set up file transfer and remote command line execution between servers and clients.

Supplemental Instruction Leader, CMU *August 2022 - Present*

- Worked with the professor to hold weekly review/practice sessions for 15-122 (Imperative Programming). Created practice problems sets and worked with over 50 students to ensure their mastery of the material.

Data Engineering Intern, Optum *June 2022 - August 2022*

- Used time series forecasting models such as ARIMA and RNNs to predict flu ratios in metropolitan statistical areas six weeks ahead of time; was able to train models up to 90% accuracy for over 180 locations.

Summer Tutor, CMU *Summer 2022, 2023*

- Piloted a discrete math primer for over 100 incoming CMU freshman. I held weekly review sessions and worked through problem sets with students to solidify their understanding of the material.

Research/Projects

NumPy Deep Learning Library *Summer 2023 - Present*

- Built a neural network framework from scratch using only Python and NumPy. Used advanced NumPy features such as stride tricks and algorithms such as Im2Col to speed up training times of convolutional and linear layers beyond standard vectorized solutions.

Autonomous Segmentation of Lung CT Scans *Summer 2021 - Present*

- Built and trained supervised deep learning models to segment the lung regions of pathological CT scans. Was able to train a model with 99.3% accuracy when compared to radiologist segmentations.

Autonomous Classification of COVID-19 Lung CT Scans *Summer 2021 - Fall 2021*

- Used pretrained models such as VGG and ResNet to create a classification model that identifies COVID-19 pathology in lung CT scans. Was able to fine tune the VGG-16 model with cyclic learning rate scheduling for 90.5% test accuracy on a data set of 675 CT scans.

Programming Skills

- Programming Languages: Python, C/C++, Java, Standard ML, MATLAB, HTML/CSS
- Deep Learning Frameworks: PyTorch, Tensorflow/Keras