KARTHIK PANSETTY

karthikpansetty@gmail.com \diamond (412) 608-7219 \diamond linkedin.com/in/karthikpansetty

EDUCATION

Carnegie Mellon University, Pittsburgh, PA	May 2022
Master of Science in Electrical and Computer Engineering	
with a concentration in AI/ML systems	GPA: 4.0/4.0
Relevant Courses : Introduction to Deep Learning, Machine Learning for Large Dataset	ts [*] , Optimization,
Computer Vision [*] , Image and Video Processing, Introduction to Machine Learning for Estimation, Detection and Learning, Foundations of Privacy [*] . (*F21)	Engineers,
Indian Institute of Technology (IIT) Gandhinagar, India Bachelor of Technology in Electrical Engineering	May 2019
with a minor in Computer Science	GPA: 8.35/10.0

Relevant Courses: Pattern Recognition and Machine Learning, Mathematical Foundations for Computer Vision and Graphics, Natural Language Processing, Applied Cryptography.

SKILLS AND INTERESTS

Skills Python, JAVA, MATLAB, C, SQL, Ruby. Frameworks PyTorch, TensorFlow, Keras, Pandas, Scikit-learn, NumPy, SciPy, Matplotlib, NLTK, PySpark, OpenCV, Networkx, Amazon Web Services, Google Cloud Platform, Rails.

PROFESSIONAL EXPERIENCE

Engineering Development Group Intern	May 2021 - August 2021
MathWorks	Natick, MA

- Built a working prototype of MATLAB WebApps as a user authored custom dashboard on ThingSpeak.
- Implemented an OpenID Connect Provider for user authentication using MathWorks account as a part of ThingSpeak to bridge the gap between the MATLAB WebAppServer and ThingSpeak.

Machine Learning Engineer HealthCloudAI

- Developed sophisticated Machine Learning models from scratch to predict clinical diagnosis from unstructured clinical text in health records of patients using Tensorflow.
- Implemented a recommendation system to generate personalized questions based on history and demographics of patients.

RESEARCH EXPERIENCE

Research Assistant (Personalized Federated Graph Neural Networks) September 2021 - Present Carnegie Mellon University Pittsburgh, PA

• Working on using different Federated Learning algorithms on Graph Neural Networks for tasks such as Graph classification, Node classification, Node and Link prediction using personalized methods in PyTorch.

Research Intern (GIcST: A Natural Language Framework to Identify Themes Differentiating Cohort Subgroups) University of Notre Dame

• Developed a Generalized Identification of Cohort Specific Themes (GIcST) framework to extract themes differentiating texts of two generalized population sub-groups while accounting for overall populationlevel experiences.

July 2019 - April 2020

May 2018 - June 2019

South Bend, IN

Bangalore, India

• This framework **automates the process of discovery** of psychological themes with respect to outcomes from unstructured psychological intervention texts to **personalize interventions** and gain insights surrounding patient conditions and outcomes.

SELECTED PROJECTS

Federated Optimization in Heterogeneous Networks Course: Optimization, Carnegie Mellon University

- Reproducibility study to understand the comparison between the FedProx algorithm and the Fe**dAvg algorithm** in highly heterogenous settings and show the effect of dropping stragglers and also the trade-off between the local update and the closeness to the global model by using the proximal term to get a smoother convergence.
- Our results show an **absolute improvement of around 19%** for the FedProx algorithm compared to the FedAvg algorithm in the best case.

Quantization of CNN based Language Models Course: Intro to Deep Learning, Carnegie Mellon University

- Implemented Quantization techniques on CNN-based Language models to demonstrate that quantization can be used to achieve a model with a 4x reduction in size with only a 2% loss in performance on Wav2Letter Language model.
- Explored Quantization techniques on Language models suggesting the potential feasibility of using complex CNN-based language models on resource-constrained devices.

Model Pruning in Neural Networks Course: Machine Learning with Large Datasets, Carnegie Mellon University

• Working on implementing different **pruning techniques for Neural Networks** such as Magnitude-based pruning, L1-norm based filter pruning and Network Slimming to induce sparsity into a Convolutional Neural Network and study the performance of different pruning methods.

Automatic Speech Recognition (ASR) Course: Intro to Deep Learning, Carnegie Mellon University

• Worked on the task of Automatic Speech Recognition using an LAS model which uses Attention mechanism. a DeepSpeech2 model, a CNN based language model and an MLP model and compared the performance across different approaches.

Face Classification and Verification Course: Intro to Deep Learning, Carnegie Mellon University

• Performed Face Classification and Verification using different Neural Network architectures as a part of a Kaggle competetion in the course.

Neural Machine Translation

Course: Pattern Recognition and Machine Learning

• Implemented Neural Machine Translation using an LSTM model with Bahdanau attention in Python using Tensorflow to translate German to English utilizing the Europarl Parallel corpus.

ACADEMIC ACHIEVEMENTS

- Member of the Eta Kappa Nu (HKN) society, the Electrical and Computer Engineering Honor Society chapter at Carnegie Mellon University. Only the top one-thirds of the Graduate students get a chance to be a part of this society.
- Dean's list awardee for outstanding academic performance, for 4 out of the 8 semesters while at IIT Gandhinagar.

Coursera Specializations: Deep Learning by deeplearning.ai, Applied Data Science with Python by University of Michigan, Introduction to Applied Cryptography by University of Colorado.

Mar 2021 - May 2021

Nov 2021 - Present

Feb 2021 - Mar 2021

May 2018 - July 2018

Feb 2021 - May 2021

Feb 2021 - May 2021