Vibha Masti

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EDUCATION

Carnegie Mellon University — Pittsburgh, PA
Master of Computational Data Science (MCDS) — *December 2024*
GPA: 4.26/4.00. Courses: Intro to DL (PhD), Intro to ML (MS), On-Device ML (PhD), Cloud Computing (MS)

PES University — Bangalore, India
Bachelor of Technology in Computer Science and Engineering — *May 2023*
GPA: 9.84/10.00. Courses: Natural Language Processing, Machine Intelligence, Data Analytics, Big Data
Awards: Prof. CNR Rao Scholarship (top 2%), Immense Contribution Award

SKILLS

Programming Languages: Python (proficient), Java (intermediate), C/C++ (moderate), R (moderate)
Machine Learning: PyTorch, pandas, numpy, scikit-learn, HuggingFace, NLTK, Keras, TensorFlow
Cloud: Azure, GCP, AWS, Git, Azure ML, Vertx, React, Regex, MongoDB, SQL, large-scale ETL

EXPERIENCE

Microsoft — Redmond, WA
Data & Applied Science Intern — *May 2024 – Aug 2024*
- Implemented Bayesian and grid/random hyperparameter optimization techniques for Bing Ads models trained on large amounts of data on AzureML pipelines.
- Developed neural architectural search optimization for DNNs and was able to reduce network size to 1/60th original size.

Apple — Bangalore, India
Machine Learning Intern — *Jan 2023 – Jun 2023*
- Created a few-shot multi-label text classifier for iOS cellular error log reports. Improved F1 score by 0.35 and deployed for online inference. Curated dataset of NL descriptions of cellular errors in Apple's iOS platform.

Goldman Sachs — Bangalore, India
Summer Analyst — *Jun 2022 – Jul 2022*
- Designed new efficient document data models in MongoDB to store mathematical constraints for linear optimization models, replacing old SQL data store and reducing fetch times by 85%. Created fetch API backend with FastAPI.

RESEARCH/PROJECTS

Growing Language Models from Smaller to Larger Size | *Capstone Project, Advisor: Emma Strubell*
- Formulating a method to grow fine-tuned low-rank model parameters from a smaller size to a larger size while retaining performance. Essentially finding a better low-rank weight initialization from a smaller model's weights.

Evaluation of Image Generation Models | *Independent Study, Advisor: Yonatan Bisk*
- Find intrinsic representations of semantic meaning to evaluate understanding capabilities of diffusion-based image-generation models. Evaluating models' understanding of concepts such as color, size, object type etc.

Twitter Analytics on the Cloud | *CMU, Cloud Computing* (*Java, Spark, ETL, AWS, Databricks)*
- Developed 3 distributed, efficient microservices: blockchain mining & verification, QR code, and Twitter user rec system.
- Performed large-scale ETL to reduce 1TB of raw Twitter data to 35GB. Serves 100,000 requests per second per microservice within budget of $1.28/hr

MyTorch | *CMU, Introduction to Deep Learning* *(Python, numpy)*
- PyTorch clone using numpy for linear, convolution, RNN, GRU, attention modules with backprop

On-Device Image Captioning | *CMU, On-Device Machine Learning* *(CoreML , HuggingFace, PyTorch, Swift)*
- Image captioning model (BLIP) optimized to run on an iPhone (quantization, pruning)

SELECT PUBLICATIONS

[1] ScripTONES: Sentiment-Conditioned Music Generation for Movie Scripts, Machine Learning for Audio Workshop, ***NeurIPS 2023***
[2] C3PO: A lightweight copying mechanism for translating pseudocode to code, Student Research Workshop, ***AACL-IJCNLP 2022***
[3] Multivariate Covid-19 forecasting with vaccinations as a factor: The case of India and USA, IEEE TENSYMP 2022 and Workshop on Healthcare AI and COVID-19, ***ICML 2022*** (Track 2)
[4] GraphCoReg: Co-training for regression on temporal graphs, *Best Student Paper,* International Workshop on Mining and Learning with Graphs, ***ECML-PKDD 2022***