

# Vibha Masti

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## EDUCATION

### Carnegie Mellon University

Master of Computational Data Science (MCDS)

Pittsburgh, PA

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

Bachelor of Technology in Computer Science and Engineering

Bangalore, India

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 – Present

- 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 1/60<sup>th</sup> original size.

### Apple

Bangalore, India

*Machine Learning Intern*

Jan 2023 – Jun 2023

- Created a few-shot multi-label text classifier for an open set of iOS cellular error categories. Improved F1 score by 0.35 and deployed for online inference. Curated dataset of NL descriptions of cellular issues 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

**Semantic Understanding 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

**Efficient LLMs** | *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

**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 TENSYP 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**