

Sree Bhargavi Balija

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Education

University of California San Diego

Master of Science in Machine learning and Data science

June 2024

CGPA: 3.5/4.0

Indian institute of Technology Hyderabad

Bachelor of Technology in engineering

July 2020

CGPA: 9.1/10

Technical Skills

Languages: C/C++, Python, Java, Javascript, Angular, Kotlin, Prolog, Perl

Web Technologies/Frameworks: Google cloud, Vue.js, Apache Spark, Hadoop, Docker, Kubernetes, Go, Angular

Databases: Elasticsearch, Firebase, Microsoft SQL Server

Data Science: Bert language models, Classical ML, DL, NLP, Explainable AI, Federated learning, Computer Vision,

Relevant Coursework

- Statistical learning
- Search and optimization
- Artificial Intelligence
- Robotics
- NLP
- Learning Algorithms
- Deep generative models

Job Experiences

Software Engineer, ServiceNow | *Java, Js, Angular, Eclipse, Github*

June 2020 – August 2022

- Worked on integrating multiple rest api's with ITSM workflows for adding capabilities like **Citrix cloud virtual systems access**, Requested item flow to the **Virtual bot** and developed the **NLU** models for workflows identification
- Designed and developed the **Dashboard** which provides a **prebuilt analytics** for 8 metrics like customer satisfaction score, cost savings etc to demonstrate the **actual business value** achieved through the **top ServiceNow products**.
- Implemented Java API for periodic and user triggered compaction, job cancellation and managing compaction statistics

Research Intern, Shiley Eye Institute | *Matlab, Python, C++*

Dec 2023 - Ongoing

- Working on **deep learning models** for the characterization of the **optic disc phenotypes** in glaucoma patients

Academic Projects & Research Experience

Federated fine tuning of Heterogeneous Large Language Models | *Python* [\[code\]](#)

Dec 2023

- Developed a novel **Federated LLM** technique using finetuned **BIOBERT** models of multiple decentralized nodes (**Edge devices**), each local model has been finetuned on their own local device data.
- Implemented a bot by fine-tuning **NLP** queries on the **LLaMA** (Language Model for Many Applications) model which involves a structured approach that combines understanding the model architecture, preparing the dataset for fine-tuning and then deploying the bot on website.
- This framework addresses the **privacy, data scarcity issues** and specifically applicable for **NLP tasks**.
- Building a search engine using **Falcon LLM** specifically for academic and research papers that understands the context and semantics of **user queries**, providing more relevant and precise results, and even summarizing research findings.

Federated learning clients side pruning through mixed precision quantization techniques Sep 2023 - Ongoing

- Working on novel client sided mixed precision quantization technique which out performs the **Hessian awareness spectrum quantization technique** in terms of inference speed
- Developed new client pruning method using **conformal predictions** which selects the most efficient clients for high global model performance.
- Working on Novel **Interpretable federated learning** method using additive models and shapley values.

Apache Spark Structured Streaming | *Python* [\[code\]](#)

March 2023

- Built an end-to-end architecture leveraging **Twitter API** and Python module Tweepy to stream and perform sentiment analysis on Twitter data, resulting in the creation of a Kafka topic for real-time data analysis.
- Developed a comprehensive flight delay prediction application using **Apache Spark, MLib and Kylin** integrating machine learning with multidimensional data analysis and cube technology to enhance predictive accuracy and efficiency.

Selected Publications

- Building Communication Efficient Asynchronous Peer-to-Peer Federated LLMs with Blockchain, **AAAI, Stanford Uni**
- Interpretable Federated Learning through Neural Additive Models, **BIOSYS 2024**

Accolades/ Online Certifications

- **Academic excellence award**, IIT Hyderabad 2018
- **UCSD ECE Summer research internship** scholar, UCSD 2023
- **Teaching Assistant**, Introductory courses in physics and chemistry departments website management 2018
- Silver medal, International Master **Mathematics Olympiad** 2013
- Representative of IITH in social online innovation collaborative **hackathon** 2020
- Achieved Skill development incentive program award, **ServiceNow** 2021