DEEP GANDHI

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EDUCATION

Dwarkadas J. Sanghvi College of Engineering (University of Mumbai) *2018 – 2022 (Expected)*
Bachelor of Engineering (B.E.) in Computer Engineering Overall GPA: **9.54/10**
– Applied Mathematics, Data Structures & Algorithms, Databases, Machine Learning, Artificial Intelligence

EXPERIENCE

EleutherAI Feb 2022 - Present
Research Intern *Guide: Stella Biderman*

- Working on detecting adversarial attacks and backdoor attacks on large language models such as GPT-J, GPT-NeoX.
- Designing a suite to constrain poisoned language models for downstream tasks such as classification and QnA.

Unicode Research Aug 2020 - Present
Research Student *Advisor: Dr.Akash Srivastava, Swapneel Mehta*

- **Active projects:**
  - Estimating the causal impact of non-expert mentors on mentee students' careers in Indian institutions
  - Small-world simulation to model opinion polarization of online communities
- **Teaching Assistant:** Summer Machine Learning Course, UMLSC 2021, funded by **Google Research India**.
- Presented various *paper reviews* in the domains of NLP and Probabilistic Programming.

JPMorgan Chase & Co. June 2021 - Aug 2021
Summer Intern *Internship*

- Worked with the Investment Banking team to automate validation checks for every release using Python and pandas.
- Designed a system for automation of evidence store creation for files to be attached to the SNOW ticket reducing the process time from 1.5 hours to 10 mins.

Dwarkadas J. Sanghvi College of Engineering Jan 2021 - June 2021
Research Assistant *Advisor: Dr.Ramchandra Mangrulkar*

- Made a project dealing with the application of Federated Learning for highly sensitive medical data.
- Worked on a research project to identify Spear Phishing using low computational NLP approaches.
- Published 2 first-author chapters in the domains of Federated Learning and Natural Language Processing.

Margosatree Technologies Jan 2020 - Jan 2021
Python Developer *Freelance*

- Developed dashboard for Syscon Automation to monitor manufacturing process using Flask, MongoDB and pandas.
- Worked on multiple client and internal projects like clustering Jupyter clients for high-end Apache runtimes and customer footfall forecasting based on gate sensor data in a local superstore chain.

Levyne Feb 2020 - May 2020
Machine Learning Engineer *Internship*

- Built the complete data analysis platform for the marketing team which performed RFM analysis on dynamic data.
- Responsible for building a chatbot using NLTK for customer interaction and a recommendation system using fast.ai.

PROJECTS

Cross-Dataset Generalization for Hate Speech Detection using Federated Learning *Guide: Dr. Zeerak Talat*

- This project is an extension of Fortuna et al. to perform better cross-dataset generalization using Federated Learning.
- Currently working on extensive analysis of every dataset to mitigate the learned biases in the Federated models.

FedHealth *Guide: Prof. Lynette D'Mello*

- Bachelor's thesis which uses FL to train models on EHR data stored on patient devices on a Blockchain network.
- Creating representations for personalized prescriptions based on user reviews using Med-BERT embeddings.

Automotive Component Failure Prediction *Guide: Dr. Kriti Srivastava*

- Collaborated with a Big 4 Consultancy firm to predict tyre life in vehicles using models such as MLP,XGB, etc.
- Designed a case study for the firm regarding tyre life uncertainty after extensive analysis of presented data.

A Federated Approach to Predict Emojis in Hindi Tweets *Guide: Dr. Zeerak Talat*

- Cost sensitive learning and SMOTE for imbalanced emoji data using FedProx for training.
- Plan to release a dataset of around 200k tweets to predict emojis for resource constrained languages.
- Proposed a new algorithm to perform Federated Learning by sharing data on the server side.
- Under review at ACL ARR 2022.

RESEARCH & PUBLICATIONS

[1] Jash Mehta*, **Deep Gandhi***, Naitik Rathod, and Sudhir Bagul, "IndicFed: A Federated Approach for Sentiment Analysis in Indic Languages," in *Proceedings of ICON 2021: The 18th International Conference on Natural Language Processing*, ACL Anthology, ***Presented***.

[2] **Deep Gandhi**, Govind Thakur, Pranit Bari, and Khushali Deulkar, "Application of Deep Learning in Cartography Using UNet and Generative Adversarial Network," in *Design of Intelligent Applications Using Machine Learning and Deep Learning Techniques*, pp. 257–271, Chapman and Hall/CRC, 2021.

[3] Jash Mehta, **Deep Gandhi**, Govind Thakur, and Pratik Kanani, "Music Genre Classification using Transfer Learning on log-based MEL Spectrogram," in *2021 5th International Conference on Computing Methodologies and Communication (ICCMC)*, pp. 1101–1107, IEEE, 2021.

[4] **Deep Gandhi**, Jash Mehta, Nemil Shah, and Ramchandra Mangrulkar, "Federated Learning for Brain Tumor Segmentation on the Cloud," in *Cloud Computing Technologies for Smart Agriculture and Healthcare*, pp. 261–278, Chapman and Hall/CRC, 2021.

[5] **Deep Gandhi**, Jash Mehta, and Ramchandra Mangrulkar, "Detection of Spear Phishing using Natural Language Processing," in *Cyber Security Threats and Challenges facing Human Life*, ch. 9, Chapman and Hall/CRC, ***Accepted***.

[6] **Deep Gandhi***, Jash Mehta*, and Pranit Bari, "Ablation Analysis of Seq2Seq Models and Vanilla Transformers for Spanish to English Translation," in *Proceedings of the 3rd International Conference on Advances in Distributed Computing and Machine Learning*, Springer Nature, ***Presented***.

TECHNICAL STRENGTHS

Programming Languages:	Python, R, Javascript, C, C++
Libraries/Frameworks:	PyTorch, fast.ai, PySyft, Flower,Flask, FastAPI, numpy, pandas, scipy, Node.js
Databases:	SQL, MongoDB, Redis, Cloud Databases
Tools:	Git, Jupyter, Docker, Bash, Heroku, AWS, Azure, LaTeX

CO-CURRICULAR ACTIVITIES & ACHIEVEMENTS

1. Part of **Shalizi–Stats** reading group which focuses on the stats book "*Advanced Data Analysis from an Elementary Point of View*" by Prof. Cosma Shalizi and Bayesian Machine Learning.
2. Attended the Advanced Language Processing Winter School (ALPS) 2022.
3. Awarded Inspire Scholarship, **Top 1%** candidates in the state for Higher Secondary Certificate (12th Grade), 2018
4. **Top 3** at *JPMorgan Chase Code for Good 2020* out of 75 teams
5. **Top 8** at *HERE Maps' Smart Mobility Hackathon 2019* out of 64 teams