Mahalakshmi Jinadoss

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Education

Oregon State University	**September 2022 – Present**
M.S. Artificial Intelligence (GPA: 3.7/4.0)	Corvallis, Oregon, USA

Courses: Machine Learning, Natural language Processing, Probabilistic Graphical Models, Machine learning challenges in Real world, Causal Inference, Trustworthy Machine Learning, Deep Learning, AI Ethics, Reinforcement Learning

Vellore Institute of Technology	**July 2016 – June 2020**
B.tech Computer Science and Engineering (GPA: 8.32/10)	Vellore, Tamil Nadu, India

Experience

NVIDIA, Santa Clara, USA   **June 2024 – September 2024**
Generative AI intern, Supervised by Dr. Mitesh Patel
- Implemented an end to end Graph based Retrieval Augmented Generation (KG-RAG) workflow by integrating LLM derived knowledge graphs with RAGs
- Performed hierarchial clustering using Leiden algorithm and used LLMs to create community summaries
- Implemented evaluation metrics like RAGAS, ARES and llms-as-a-judge

Tattle Civic Technologies, Gurgaon, India   **February 2022 – July 2022**
Data Scientist, Supervised by Tarunima Prabhakar
- Defined technical specifications of features based on user requirements to design a plugin to detect online gender based violence for project Uli, part of the Mozilla Data Futures Lab 2023 Cohort [Webpage][Chrome Plugin][Github][Mozilla]
- Scraped 1.6 million tweets using twint and stored the data in a structured manner in aws buckets and mongodb
- Implemented ML based data pooling to get a relevant and diverse dataset of 24000 tweets for expert annotations
- Setup a ML pipeline to train, test and evaluate different transformer architectures using Pytorch

AI4Bharat, IIT-M, India   **December 2020 – December 2021**
Machine learning Research Assistant, Advised by Dr.Pratyush Kumar and Dr.Mitesh Khapra
- Built an end to end pipeline to mine paired sentences from videos, websites, PDFs and align them using language agnostic sentence embedding[Webpage]
- Responsible for implementing, testing and validating web scrapers using Selenium and BeautifulSoup to mine articles from fact-checking websites
- Studied and evaluated existing NMT metrics, built an annotation tool, designed and conducted pilot studies.

Indian Institute of Technology-Madras(IIT-M), Chennai, India   **December 2019 – June 2020**
Student ML Intern, Advised by Dr.Pratyush Kumar
- Investigated BERT-based architectures like RoBERTa, ALBERT, DistilRoBERTa and BERT for sentence level subjective bias detection. Achieved sota performance on this task using a BERT+BiLSTM model with a F1 score of 0.8

Selected Course Projects

Using Model Explanations in Training: **Spring 2023**
- Implemented an explanation ensemble in an adversarial setup with a Discriminator in Pytorch to incorporate explanations while training image classification models.
- Compared performance across different datasets and explanation methods like SHAP and GradCAM.

Attacking and Defending Machine Learning Models for Tabular Data: **Spring 2023**
- Adapted ZOO, HopSkipJump attacks against ensemble models trained on imbalanced credit data and implemented adversarial training to increase robustness of the model.
- Researched imperceptibility, focusing on creating realistic attacks for tabular data.

Bias Mitigation: **Winter 2023**
- Explored the use of two types of adversarial training methods for mitigating bias from downstream NLP tasks.
- Researched and implemented different fairness metrics.

Publications

- **Samanantar: The Largest Publicly Available Parallel Corpora Collection for 11 Indic Languages** [Pdf]
  Transactions of the Association for Computational Linguistics (TACL 2022) 10: 145–162.

- **Designing for Disagreements: A Machine Learning Tool to Detect Online Gender-based Violence**
  Feminist Perspectives on Social Media Governance, Februrary 2023 64-79

- **The Uli Dataset: An Exercise in Experience Led Annotation of oGBV** [Pdf] 🏆**Outstanding paper award**
  Workshop on Online Abuse and Harms at Annual Conference of the NAACL 2024

Technical Skills

Languages: Python, R, SQL, Bash, HTML, CSS5, MATLAB, C++
Software/Tools: Git, PostgreSQL, MySQL, MongoDB, Neo4j, ngrok, Tableau, AWS, GCP, SamIam
Frameworks: PyTorch, Pandas, Langchain, llamaindex, milvus, Numpy, Matplotlib, scikit-learn, TensorFlow, Django, Selenium, BeatifulSoup, XGBoost, Streamlit, FastAPI