

Mahalakshmi Jinadoss

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## Education

### Oregon State University

Sep 2022 – Dec 2024

M.S. Artificial Intelligence

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, Social and Ethical Issues of AI

### Vellore Institute of Technology

Jul 2016 – Jun 2020

B.tech Computer Science and Engineering

Vellore, Tamil Nadu, India

## Experience

### NVIDIA, Santa Clara, USA

Jun 2024 – Sep 2024

Generative AI Intern

- Implemented an end to end Graph based Retrieval Augmented Generation (KG-RAG) workflow by integrating LLM-derived knowledge graphs with Vector RAGs
- Performed hierarchical clustering using Leiden algorithm and used LLMs to create community summaries
- Implemented evaluation metrics like RAGAS and llms-as-a-judge

### Oregon State University, Corvallis, USA

Jun 2023 – Jun 2024

Research Assistant, Advised by Dr.Karthika Mohan and Dr.Weng-Keen Wong

- Evaluated structure learning algorithms for high-dimensional simulated and real-world mixed data
- Benchmarked the performance against traditional ML models

### Tattle Civic Technologies, Gurgaon, India

Feb 2022 – Jul 2022

Data Scientist, Supervised by Tarunima Prabhakar

- Defined technical specifications for Uli, a plugin to detect online gender-based violence[[Webpage](#)][[Chrome Plugin](#)]
- Co-developed annotation guidelines through literature review and focus groups, and trained annotators using paired exercises
- Implemented ML-based data pooling to get a relevant and diverse dataset of 24000 tweets for annotation from 1 million
- Setup an ML pipeline to train, test, and evaluate different transformer architectures using Pytorch

### AI4Bharat, IIT-M, India

Dec 2020 – Dec 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. Stored the data in a structured manner in aws buckets and mongodb
- Studied and evaluated existing Neural Machine Translation metrics, built an annotation tool, designed and conducted pilot studies.

### Indian Institute of Technology-Madras(IIT-M), Chennai, India

Dec 2019 – Jun 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** [[Pdf](#)]  
Feminist Perspectives on Social Media Governance, February 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

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**Languages:** Python, R, SQL, Bash, HTML, CSS5, MATLAB, C++

**Software/Tools:** Git, PostgreSQL, MySQL, MongoDB, Neo4j, ngrok, Tableau, AWS, GCP

**Frameworks:** PyTorch, Pandas, Langchain, llamaindex, milvus, Numpy, Matplotlib, scikit-learn, TensorFlow, Django, Selenium, BeautifulSoup, XGBoost, Streamlit, FastAPI

## Extracurriculars

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### Engineers That REad (ETRE)

Sep 2022 – Dec 2024

Treasurer and Organizer

- Co-Organized the book selection and meeting logistics in addition to participating in weekly, student-facilitated discussions on how engineering practices intersect with broader societal challenges

### Artificial Intelligence Graduate Student Association (AIGSA)

Sep 2022 – Dec 2024

Member and Mentor

- Co-Organized weekly reading groups dedicated to discussing research papers related to AI governance and safety
- Participated in the Artificial Intelligence Support Program (AIASP) to assist underserved students applying to the OSU AI program

### Student Council

Jul 2016 – Jul 2017

Representative for the B.tech in CS program

- Represented the interests of 2000+ students at a management level
- Held Office hours, conducted workshops to enhance the learning experience of the student body

## Awards and Honours

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- Project Uli selected as one of the five projects in the 2023 Mozilla Data Futures Lab Cohort
- Nasscom AI Game Changer Award, 2021 (Academic Category) – Awarded to Team Samanantar for contributions to AI research
- First place, Lema Labs Maze Solver Robotics Competition, 2018
- VITEEE Scholarship under GV School Development Programme (GVSDP), 2016