ANUSHA SARRAF

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EDUCATION

Purdue University West Lafayette, IN

- BS, Major: Computer Science, Track: Machine Intelligence Aug 2020 – May 2024
- Minor: Philosophy

RESEARCH EXPERIENCE

Carnegie Mellon University Remote

Research Assistant with Dr. Min Xu Sep 2024 – Present

- Developing a state-of-the-art framework for visualizing deep learning model predictions using counterfactual explanations.
- Reproducing results from existing frameworks to facilitate comparative analysis and benchmarking
- Co-authoring a paper focusing on enhancing model interpretability through Explainable AI (XAI)

Meta – IDEAS Lab, Purdue University West Lafayette, IN

Lead Researcher with Dr. Aniket Bera July 2024 – Aug 2024

- Multimodal egocentric data capture of user's perspective using Project ARIA (Augmented Reality Intelligent Assistant) to identify patterns in individualistic human behavior
- Using post-processing SLAM, Multi-SLAM, Eye Gaze and Hand Tracking derived data outputs to inform future product development strategies and advance research in machine perception and augmented reality

Duality Lab, Purdue University West Lafayette, IN

Research Assistant with Dr. James Davis May 2023 – Aug 2023

- Automated collection and analysis of GitHub and Stack Overflow data using Rest API, Graph QL, and Open AI API
- Implemented test coverage for ONNX converter testers by building tf2onnx converter
- Actively participated in lab meetings by reviewing prospective publications, presenting work and weekly updates, and engaging in peer presentations

Discovery Park, Purdue University West Lafayette, IN

Research Assistant with Dr. Gaurav Nanda and Dr. Romila Pradhan Jan 2023 – May 2023

- Training and testing classification models on Occupational Safety and Health Administration data to determine accuracy of occupational hazards descriptions
- Hybridized combination of one-word, two-word, and three-word history models with binomial and multinomial logistic regression models on 10,000+ balanced and unbalanced data entries to observe F1, recall, and precision metrics

Sandia National Laboratories Albuquerque, NM

Machine Learning Research Intern with Dr. Mark Stevens Jun 2022 – Jul 2022

- Developed a sorting mechanism for quick access to a vast database of fatty acid structures using Rdkit

- Constructed systems to connect chemical structure datasets to machine learning codes to automate discovery of new chemical compounds reducing the need of extensive experimentation
- Disseminated research process by presenting to 50+ scientists, students, and professors

Discovery Park, Purdue University West Lafayette, IN
Research Assistant with Dr. Nadia Gkritza Feb 2022 – May 2022

- Built a database to assess popularity of electric vehicles from public forums
- Collected, categorized, and cleaned 300+ publicly available electric vehicle discussions on Twitter
- Combined 12 industry categories, and 52 American states to run spatial analysis

Dr. Erik Hoel Research Group, Tufts University Remote
Research Intern July 2019 – Oct 2019

- Developed a thorough understanding of training and analyzing neural networks through a pet project by building a database from Twitter user data of two world leaders
- Collected, categorized, cleaned, and organized 200+ data entries to run logistic regression and differentiate tweeting mannerisms

TEACHING EXPERIENCE

Department of Philosophy, Purdue University West Lafayette, IN
Teaching Assistant, Ethics of Data Science Aug 2023 – Dec 2023

- Contributed to smooth functioning of course by communicating instructor expectations, voicing student concerns, and grading assignments for 50+ students
- Led weekly recitations sections for 50+ students by engaging in class material and activities

FELLOWSHIPS AND AWARDS

Archival Presentation Posters (third place) April 2023
Spring Undergraduate Research Conference, Purdue University
Dean's List, Purdue University Fall 2023, 2022, 2021, 2020 and Spring 2023
Semester Honors, Purdue University Fall 2023, 2022, 2020

PUBLICATIONS

Sarraf, A. (2022). Understanding of Public Discuss on Equity Issues in Transportation Electrification Using Social Media Crowdsourcing Data. https://docs.lib.purdue.edu/duri/21

Jajal, P., Jiang, W., Tewari, A., Kocinare, E., Woo, J., Sarraf, A., ... & Davis, J. C. (2024, September). Interoperability in Deep Learning: A User Survey and Failure Analysis of ONNX Model Converters. In *Proceedings of the 33rd ACM SIGSOFT International Symposium on Software Testing and Analysis*(pp. 1466-1478). https://dl.acm.org/doi/abs/10.1145/3650212.3680374

PRSENTATIONS

"Odiff: Differential Testing of ONNX Model Converters". Research talk delivered at Summer Undergraduate Research Symposium, Purdue University, West Lafayette, IN, Aug 2023

"Investigating Explainability of ML Model Decisions for Injury Surveillance". Poster presentation delivered at Spring Undergraduate Research Conference, Purdue University, West Lafayette, IN, April 2023

"Understanding of Public Discuss on Equity Issues in Transportation Electrification Using Social Media Crowdsourcing Data". Poster presentation delivered at Spring Undergraduate Research Conference, Purdue University, West Lafayette, IN, May 2022

"Optimization of discovery of chemical compounds". Virtual poster presentation delivered at Summer Undergraduate Research Symposium, Purdue University, West Lafayette, IN, July 2022

PROJECTS

Food For Thought| *AI Chatbot* July 2024 – Present

- Implemented Ollama LLM in Langflow using prompt engineering to create an interface for restaurant FAQs
- Created a vectorized database in DataStax Astra DB to implement Retrieval Augmented Generation (RAG) and connect to restaurant information

Sign2Text| *Group Project* June 2024 – Present

- Converts American Sign Language symbols to text using OpenCV and PyAutoGUI

Optical Character Recognition (OCR) | *Group Project* Oct 2023 – Nov 2023

- Detected objects and text from entity relationship diagrams using OpenCV and NLTK
- Measured and evaluated k-means clustering performances of stemmed and unstemmed text

Pacman Jan 2023 – May 2023

- Developed a python-based Pacman AI agent performing maze traversal, food collection and ghost evasion
- Implemented path search algorithms like DFS, BFS, A* to influence maze navigation
- Utilized minimax/expectimax algorithms to refine Pacman's strategic decision-making against adversarial ghosts

Shell Project Sep 2022 – Nov 2022

- Developed a bash like custom shell
- Implemented complex features like wildcards, variable expressions, subshells, file redirection, and pipes, involving UNIX system calls using Shell, C, C++, Git

Malloc Aug 2022 – Sep 2022

- Developed and optimized implementation of malloc() and free() in C using the sbrk() system call
- Efficiently maintained and organized allocated, unallocated memory chunks and free lists using C, GDB, Valgrind, CUnit, Git

BoilerGram | *Group Project, Social media app* Sep 2020 – Dec 2020

- Implemented Client-Server system with real time response and Graphical User Interface in Java for better UX design

Flask Chat App | *Web App* Jun 2019 – July 2019

- Enables secure and private real time communication by using only one time read text message features across multiple user platforms using Python Flask, JavaScript, CSS, Heroku

Indian Premier League (IPL) | *Database Management* Nov 2018 – Dec 2018

- Built a database using binary files in C++ with user identification features

SKIILS

Languages: Python, C, C++, Java, Rust, XML, HTML, R, SQL, JavaScript, CSS, GraphQL, Assembly, Bash Scripting
Technologies: Hadoop, Docker, Flask, Neo4J, TensorFlow, Keras, LSTM, MongoDB, MySQL, Rest API, CUDA, Google Cloud Platform, Amazon Web Services, Git, pip, OpenCV, Beautiful Soup, PyTorch, NLTK, pipenv, RDKit, MoleculeNet, Sci-kit Learn, ONNX, PyAutoGUI, Ollama, OpenAI API, Langflow

RELEVANT COURSEWORK

Computer Science: Object-Oriented Programming, Data Structures and Algorithms, Discrete Mathematics, Computer Architecture, Databases, Systems Programming, Artificial Intelligence, Analysis of Algorithms, Web Information Search and Management, Data Mining and Machine Learning, Statistics, Probability, Linear Algebra

Philosophy: Philosophy of Artificial Intelligence, Philosophy of Science, Ethics, Philosophy of Mind, Fun and the Meaning of Life, History of Ancient Philosophy

Other: Principles of Persuasion, Scientific writing, and communication

REFERENCES

Can be provided upon request.