Akhil Arza

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EDUCATION

University of Massachusetts Amherst — *Amherst, MA*
Master of Science — *Sep 2022 - May 2024*
Major in Computer Science; **GPA: 3.74/4.0**
Relevant Coursework: *Distributed and Operating Systems, Software Engineering, Machine Learning,*
Computer and Network Security, Advanced NLP, Systems for Data Science, Cloud Computing

Indian Institute of Technology (IIT) Kharagpur — *Kharagpur, India*
Bachelor of Technology (Honours) and Master of Technology — *Aug 2017 - May 2022*
Major in Metallurgical and Materials Engineering, Minor in Artificial Intelligence; **GPA: 8.44/10**
Relevant Coursework: *Algorithms and Data Structures, Computer Architecture, Computer Networks,*
Deep Learning, Natural Language Processing, Big Data Processing, Probability, Stochastic Processes

PROFESSIONAL EXPERIENCE

Credit Suisse — *Mumbai, India*
Quantitative Developer Intern | Scenario Expansion Team — *Apr 2021 - Jun 2021*
- Built an interactive web tool using Shiny, JavaScript, ggplot2 for the frontend to analyze and assess the expanded scenarios aiding in the scenario expansion model selection task as a part of the bank's stress testing framework.
- Executed scenario expansion models on the backend in R programming language and worked extensively in designing this tool with data visualization screens, post-expansion analysis results, automated model documentation functionality, etc.

ACADEMIC PROJECTS

EleNa: Elevation-based Navigation System | *Software Engineering* — *Amherst, MA*
Guide: Prof. Heather Conboy, UMass Amherst — *Mar 2023 – May 2023*
- Developed EleNa, a navigation system that optimizes routes based on elevation gain using Dijkstra's and A* algorithms.
- Implemented modular codebase using Python and Flask for the backend, HTML, CSS, and JavaScript for the frontend.
- Followed the MVC architecture for achieving modularity, scalability, and maintainability, ensured version control with Git, and conducted unit, integration tests using PyTest to ensure high reliability of the system.

Mental Illness Identification Using Transformer Language Models | *NLP* — *Amherst, MA*
Guide: Prof. Mohit Iyyer, UMass Amherst — *Mar 2023 – May 2023*
- Curated a custom dataset by scraping and pre-processing posts from mental health-related subreddits and fine-tuned transformer models like RoBERTa, XLNet, etc. on this dataset to detect signs of mental illness from social media posts.
- Achieved performance improvement and competent results through ensemble averaging and hyperparameter tuning.

Bazaar: Distributed Peer-to-Peer Marketplace | *Systems* — *Amherst, MA*
Guide: Prof. Peter F. Klemperer, UMass Amherst — *Sept 2022 – Dec 2022*
- Developed a P2P distributed architecture-based marketplace in Python where communication between each peer (buyer/seller/trader) is achieved using Pyro4 to perform a trade that distributes workloads among peers.
- Designed the distributed application using techniques like leader election, cache consistency, and fault tolerance.
- Conducted extensive performance metric analysis and topology testing to analyze the robustness of the application.

Lexical Complexity Prediction | *NLP* — *Kharagpur, India*
Guide: Prof. Pawan Goyal, IIT Kharagpur — *Jan 2021- Apr 2021*
- Worked on building, evaluating, and fine-tuning models that help in predicting contextual lexical complexity of single words and multi-word expressions given an input sentence containing that word/expression.
- Incorporated pre-trained BERT with Bi-LSTMs and fine-tuned it on the augmented version of CompLex dataset to improve language understanding and obtained satisfactory results as a part of SemEval-2021 Task 1.

TECHNICAL SKILLS

Programming Languages: C, C++, Python, R
Web Tools: JavaScript, React, Node.js, Flask
ML/AI: PyTorch, Pandas, NumPy, Matplotlib
Miscellaneous: Git, AWS, SQL, MongoDB

ACHIEVEMENTS AND ACTIVITIES

Codeforces : Achieved a max rating of 1711 (expert) on Codeforces, a competitive programming platform. — *2021*
ICPC : Secured a team rank of 409 in the ICPC Asia Amritapuri Doublesite Regional Contest. — *2020*
Google Kickstart : Ranked 854 in Google Kickstart Round H 2020 (username: akhil_arza). — *2020*