Utsav Sharma

us2143@nyu.edu | (929) 689-5853 | LinkedIn

Education

New York University, *New York, USA* **May 2025**
Master's of Science, Computer Science GPA: 3.77
Relevant courses: Data Science, Big Data, Data Visualization, Artificial Intelligence, Database Management Systems
Amity University, *Noida, India* **May 2023**
Bachelor's of Technology Computer Science (AI/ML Honors) CGPA: 8.44

Experience

Graduate Research Assistant, *New York University* **Oct 2023 - Present**
- Spearheading the integration of Generative AI Large Language Models (LLMs) (Llama3, Mistral, Falcon) into semiconductor design
- Creating a multi-modal agent-based system using curated datasets on high-performance clusters, employing retrieval augmented generation, and reinforcement learning from human feedback (RLHF), achieving 80% improvement in task-specific accuracy
- Research work "Towards AI Design Assistants for EDA" selected for presentation at the 2024 Student Research Competition (SRC) at the International Conference on Computer-Aided Design (ICCAD) - Tier-1 Conference
- Awarded at Student Scholar Program at ICCAD'2024 for exceptional research on LLMs

Data Science Intern, *Hewlett Packard Enterprises* **Jan 2023 - Jul 2023**
- Developed automated scripts for efficiently collecting data from APIs, reducing data collection time by 75%
- Applied data pre-processing techniques to ensure collected information was accurate and consistent, improving integration efficiency by 95% for the Indus Army Project

Research Intern, *Deloitte Touche Tohmatsu Limited* **Jun 2022 - Jul 2022**
- Researched AutomationAI in chatbot communication, exploring emerging trends and innovative technologies to enhance functionality
- Designed chatbot workflows to optimize interactions, leading to a 70% improvement in user experience

Data Science Intern, *SheValues* **Sep 2021 - Nov 2021**
- Implemented web-scraping using Python to support an AI recommendation system
- Processed over 35,000 scraped job listings by cleaning and transforming data, enabling efficient feature engineering and model training

Projects

OpenROAD-Assistant: Domain-Specific Large Language Model For Chip Design **Oct 2023 - Present**
Developed an LLM chatbot through advanced retrieval-aware fine-tuning and self-tailored datasets, leveraging the Llama3 foundation model, for both script generation and natural language responses, achieving performance metrics of 77% pass@1, and 98% BERTScore

Predictive Analysis of Histopathological Images With Hybrid Algorithms **Jul 2022 - Jun 2023**
Enhanced IDC breast cancer detection accuracy to 99% by combining nature-inspired optimization techniques with advanced ML models

Analysis of AI Customer Segmentation Clustering Techniques **Jul 2021 - Jan 2022**
Conducted a comparative study of clustering models (K-means, Hierarchical) with AI frameworks, including TensorFlow 2.0 and Keras

Twitter Sentiment Analysis **May 2021 - Aug 2021**
Designed an NLP model achieving 80% accuracy for sentiment analysis using Naive Bayes and SVM algorithm

Publications

OpenROAD-Assistant: An Open-Source Large Language Model for Physical Design Tasks. Utsav Sharma*, Bing-Yue Wu*, Sai Rahul Dhanvi Kankipati, Vidya A. Chhabria, and Austin Rovinski. *ACM/IEEE International Symposium on Machine Learning for CAD (MLCAD '24)*. Sep 2024

Invited: Generative Methods in EDA: Innovations in Dataset Generation and EDA Tool Assistants. Vidya A. Chhabria, Bing-Yue Wu, Utsav Sharma, Kishor Kunal, Austin Rovinski, and Sachin S. Sapatnekar. *Proceedings of IEEE/ACM International Conference on Computer-Aided Design (ICCAD '24). Oct 2022*

EDA Corpus: A Large Language Model Dataset for Enhanced Interaction with OpenROAD. Bing-Yue Wu*, Utsav Sharma*, Sai Rahul Dhanvi Kankipati, Ajay Yadav, Bintu Kappil George, Sai Ritish Guntupalli, Austin Rovinski, Vidya A. Chhabria. *The First IEEE International Workshop on LLM-Aided Design (LAD'24)*. Jun 2024 - **Nominated Best Paper**

Predictive analysis on histopathological images using metaheuristics and machine learning methods. Aditi Ganapathi, Utsav Sharma, Saumya Gupta, Arihan Deshwal, Surbhi Vijh and Sumit Kumar**.** *International Journal of Bioinformatics Research and Applications, Vol. 20, No. 5*

Blockchain in Healthcare: Use Cases. Utsav Sharma, Aditi Ganapathi, Akansha Singh, Krishna Kant Singh. *Blockchain and Deep Learning for Smart Healthcare*, 2023

Analysis of Customer Segmentation Clustering Techniques. Utsav Sharma, G Aditi, Nihar Ranjan Roy, Shailendra Narayan Singh. *12th International Conference on Cloud Computing, Data Science & Engineering (Confluence).* January 2022

A Quantitative Performance Evaluation of Machine Learning Algorithms for Analyzing Sentiments of Emoticons. G Aditi, Utsav Sharma, Sumit Kumar, Jitendra Singh Jadon.*12th International Conference on Cloud Computing, Data Science & Engineering (Confluence)***.** January 2022

Key Skills

Languages	Python, C, C++, Java, HTML, CSS, SQL, MATLAB
Operating System	Windows, Linux, High-performance clusters
Frameworks/Tools/ Technologies	PyTorch, Transformers, Pandas, Numpy, Matplotlib, TensorFlow, Scikit-Learn, Keras, Seaborn, NLTK, HuggingFace, Inference Pipelines, Datasets, Unsloth, GitHub, NLP, Apache Spark, Hadoop, Tableau, CI/CD, MLOps, LLMOps
Software	Agile methodology, Data Structures, Analysis and Design of Complex Algorithms, Networking, Business Process Management, Software Lifecycle