

Utsav Sharma

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Education

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| New York University, New York, USA | May 2025 |
| Master's of Science, Computer Science | GPA: 3.77 |
| Amity University, Noida, India | May 2023 |
| Bachelor's of Technology Computer Science (AI/ML Honors) | CGPA: 8.44 |

Experience

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| Software Engineer–Machine Learning, Microsoft | June 2025 - Present |
| <ul style="list-style-type: none">Building an LLM-based retrieval-augmented classifier to categorize Bing experiences for granular metric analysisDeveloped honeypots to detect and analyze model failure cases in Bing/Copilot Search for robust evaluation | |
| Research Scientist, New York University | Oct 2023 - May 2025 |
| <ul style="list-style-type: none">Spearheaded the development of chip design-centric LLM (OpenROAD Assistant) by building an entire post-training stackCurated and labelled a domain-specific dataset (EDA Corpus, ~500K tokens), and introduced a novel retrieval-augmented fine-tuning technique tailored to chip design, increasing task-level accuracy by ~3x over baselineDesigned a tool-grounded, self-correcting agent using a hybrid supervised + reinforcement learning technique that writes, executes, debugs, and repairs Python scripts from tool feedback, achieving 94% tool-verified success with ~1.19 auto-fix iterationsThis Research:<ul style="list-style-type: none">Recognized at the 2024 Student Research Competition at the International Conference on Computer-Aided Design (ICCAD) - Tier-1 ConferenceAwarded at the Student Scholar Program at ICCAD'2024 for exceptional research on LLMsWon the NVIDIA Academic Grant Program award for LLM research on chip design | |
| Data Science Intern, Hewlett Packard Enterprises | Jan 2023 - Jul 2023 |
| <ul style="list-style-type: none">Automated manual API data pre-processing with optimized algorithms, cutting data integration time by 70%, reducing errors by 90% | |
| Machine Learning Research Intern, Deloitte Touche Tohmatsu Limited | Jun 2022 - Jul 2022 |
| <ul style="list-style-type: none">Researched machine learning models leveraging natural language processing (NLP) techniques to optimize chatbot communication and enhance chatbot functionality | |
| Data Science Intern, SheValues | Sep 2021 - Nov 2021 |
| <ul style="list-style-type: none">Web-scraped over 35,000 job listings and performed data transformation and feature engineering for female job recommendation system | |

Projects

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| Large Language Model For Semiconductor Chip Design: OpenROAD-Assistant | Oct 2023 - Present |
| Developed an Open-Source LLM chatbot through novel retrieval-aware fine-tuning and self-tailored datasets, leveraging the Llama3 foundation model, for script generation and natural language responses, achieving performance metrics of 77% pass@3, 98% BERTScore | |
| Predictive Analysis of Histopathological Images With Hybrid Nature-Inspired Machine Learning Algorithms | Jul 2022 - Jun 2023 |
| Enhanced cancer detection accuracy to 99% by combining nature-inspired optimization techniques, including Hybrid Lion and Cat Swarm Optimization with an artificial neural network model | |

Quantitatively compared Naive Bayes and Support Vector Machine algorithms for novel emoticon-only sentiment analysis using natural language processing techniques, achieving 80% accuracy for the Naive Bayes algorithm

Publications

OpenROAD Agent: An Intelligent Self-Correcting Script Generator for OpenROAD. Bing-Yue Wu, Utsav Sharma, Austin Rovinski, and Vidya A. Chhabria. *Proc. ICLAD*, Jun 2025

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*. 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 AWARD**

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

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)*. Jan 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)*. Jan 2022

Key Skills

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| 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 |

Achievements/Certifications

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| Finalist - Student Research Competition - IEEE/ACM International Conference on Computer-Aided Design (ICCAD '24) | 2024 |
| Dean's Academic Scholarship - New York University | 2023 |
| Student Lead - Amity Innovation and Design Center for AI/ML | 2022 |
| Google Cloud Readiness program | 2021 |
| Top 30 Finalist - Amity Project Management Hackathon (1000 participants) | 2021 |
| 3rd Place - Amity Youth Fest - University Research Competition (35 Teams) | 2020 |

Dean's Academic Scholarship - Amity University

2019

High School Valedictorian for Computer Science

2019

Volunteering

Student Volunteer, CharityHat (60 Hours)

Jan 2022 - Jun 2022

Contributed to COVID-19 relief efforts by distributing masks and essential supplies to underserved communities, ensuring safety and support during the pandemic

Volunteer, Lakshyam (73 Hours)

Oct 2020 - Jan 2021

Engaged in teaching underprivileged girls while securing potential donors to support their education. Managed administrative tasks, including data organization and secondary research, contributing to streamlined operations and impactful programs

Local Moral Education Trainer, Resident's Welfare Association (20 Hours)

Mar 2019 - Dec 2019

Conducted engaging sessions for local underprivileged residents, promoting values, ethical awareness, and community-building

Piano-Training Volunteer, International Award For Young People India (102 Hours)

Jul 2017 - Feb 2018

Guided four local children in playing piano, fostering creative potential and holistic development through musical