Mohak Dwarkadhish Sharma

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EDUCATION

Arizona State University **08/2024 – 05/2026**
MS in Data Science, Analytics and Engineering (Computing and Decision Analytics), Tempe, USA

Mumbai University **09/2023 – 08/2024**
P.G. Diploma in Information Technology(Computer Vision), Mumbai, India

Mumbai University **08/2020 – 05/2023**
BSc in Information Technology, Mumbai, India

EXPERIENCE

Arizona State University, Graduate Researche Assistant, Tempe, AZ 08/2025 – Current

- Conducting fully funded research under the mentorship of Dr. Giulia Pedrielli, focusing on Bayesian network–based risk modeling for autonomous vehicle collisions and their implications for the insurance industry.
- Designing probabilistic frameworks to assess multi-factor risks in urban environments using expert elicitation and publicly available datasets.
- Developing simulations of high-risk driving conditions (e.g., rush-hour congestion, extreme weather) to evaluate evolving liability and pricing models for insurance providers.

Arizona State University, Research Assistant, Tempe, AZ 01/2025 – Current

- Working with Dr. Petar Jevtic on the research project "Evaluating the Impacts on Satellites and Business Infrastructure Amidst Geomagnetic Variations", focusing on predictive modeling and risk assessment.
- Developed and applied Bayesian network models to analyze the effects of space weather events on critical infrastructure, aiding in strategic decision-making.
- Conducted data-driven evaluations to identify correlations between geomagnetic disturbances and operational disruptions in satellite-dependent industries.
- Prepared research findings and recommendations for mitigating potential risks, contributing to the broader understanding of space weather impacts.

Sketo Info Tech, Software Developer Intern, Mumbai, India 01/2024 – 06/2024

- Led the complete revamp of the company website using WordPress, significantly improving functionality and optimizing user engagement, resulting in a 30% increase in customer satisfaction.
- Developed and maintained Power BI dashboards, which enhanced the company's sales forecasting accuracy by 25%, driving actionable business insights.
- Strengthened the company's server infrastructure and security, reducing downtime by 20%, and ensuring smooth operations across departments.

WildScapes Expedition, Website Developer, Mumbai, India 02/2023 – 12/2023

- Engineered a custom WordPress website, which increased user engagement by 40% and cut bounce rates by 50%, enhancing the digital experience for wildlife enthusiasts.
- Leveraged Google Analytics to analyze user behavior, resulting in a 25% increase in session duration and actionable insights for optimization.

Sketo Info Tech, Technical Writer, Mumbai, India 11/2022 – 01/2023

- Authored high-quality technical content, driving a 15% increase in site traffic and improving brand messaging.
- Drafted comprehensive Business Requirements (BRD) and Technical Design Specifications (TDS), ensuring clear stakeholder alignment and project readiness.

PUBLICATIONS

- Mohak Dwarkadhish Sharma, Anshita Bharadwaj, ***"Quantifying Hallucination Bias in AI-Generated Deepfakes: A Multimodal Analysis Using Divergence Metrics"***, *Research Square* (Preprint), 2025.
- Mohak Dwarkadhish Sharma, ***"AI-Driven Data Breach Detection"***, *International Journal of Innovative Research in Engineering (IJIRE)*, Volume 06, Issue 02 (March–April 2025), pp. 68–73.
- Mohak Dwarkadhish Sharma, Abdul Nasim Nadir Shaikh, ***"A Case Study on Deepfake Awareness, Mumbai, India"***, *Indian Journal of Computer Science and Technology*, Volume 04, Issue 01 (January–April 2025), pp. 121–126.

SKILLS

Languages: Java, Python, R, C, C++, SQL, HTML, CSS, JavaScript, Firebase

Data & Cloud Technologies: PostgreSQL, NoSQL, Distributed Databases, Parallel Query Execution, Query Optimization, MapReduce, Spark, Cloud Data Management, OpenStack, Kubernetes, Vertex AI

Machine Learning & AI: Bayesian Networks, TensorFlow, Keras, PyTorch, OpenAI API, Scikit-learn, Hugging Face

Statistics & Optimization: Probability, Hypothesis Testing, Bayesian Inference, Maximum Likelihood Estimation (MLE), Convergence of Random Variables, Computing Optimization, ADMM, Gradient-based Methods, Convex Optimization

Big Data & Processing: Streaming Data, Graph Processing, Data Platforms for LLMs, Indexing Structures, Storage Systems, Parallel Computing

Tools & Frameworks: MATLAB, IBM SPSS, Power BI, Flask, Bootstrap, CV2, Jupyter Notebook, Google Colab, PyCharm, Visual Studio Code

PROJECTS

Black Hole Simulation Project **12/2024 – 12/2024**

- Developed a Black Hole Simulation inspired by the supermassive black hole M87 using Python and Pygame, simulating photon interactions with 90% accuracy in gravitational lensing visualizations.
- Modeled astrophysical phenomena, including the Event Horizon and Accretion Disk, creating a realistic and engaging simulation used by over 200 viewers for educational purposes.
- Implemented physics-based calculations, such as gravitational forces and relativistic effects, reducing simulation inaccuracies by 15%.
- Collaborated with an aerospace engineer to ensure 100% accuracy in key physics concepts, enhancing the educational value of the project.

Emotion Detection System **11/2024 – 11/2024**

- Developed an emotion detection system using Python and TensorFlow, achieving 92% accuracy in classifying emotions from facial expressions.
- Integrated OpenCV for real-time emotion analysis, enhancing user engagement in interactive applications.
- Applied convolutional neural networks (CNNs) for feature extraction and model training, optimizing recognition efficiency.

Cover Letter Making Chrome Extension **11/2024 – 11/2024**

- Created a browser-based Chrome extension to dynamically generate personalized cover letters using JavaScript and Flask APIs.
- Implemented template-based NLP to automate the process of tailoring cover letters for specific job applications.
- Enhanced user experience by designing an intuitive interface for seamless interaction and customization.

Story Maker Model using Google Cloud and Vertex AI **10/2024 – 10/2024**

- Developed a powerful story generation model leveraging Vertex AI on Google Cloud, enabling automated creation of narrative structures with an accuracy of 85%, improving productivity in creative projects.
- Optimized machine learning pipelines for NLP tasks, focusing on language generation and semantic consistency.

Eyeball Cursor Control **10/2024 – 10/2024**

- Engineered a cutting-edge hands-free cursor control system using Python and OpenCV, achieving 90% real-time accuracy, enhancing accessibility and improving response time by 30%.
- Implemented computer vision algorithms and real-time data processing for user interaction without physical input devices.

Medical Chatbot **09/2024 – 09/2024**

- Led a team to create a highly responsive medical chatbot utilizing Flask and Hugging Face models, achieving 85% prediction accuracy while reducing API latency by 20%.

- Designed and deployed natural language processing (NLP) systems for healthcare query resolution and patient support.

Face Detection System 05/2024 – 05/2024

- Built a real-time face detection system using Python and OpenCV, achieving 95% detection accuracy, leveraging the Haar Cascade classifier for superior performance.
- Enhanced real-time detection capabilities through data preprocessing and efficient algorithm design.

STASH Robot Project: Obstacle Detection and Movement 01/2024 – 02/2024

- Mentored a team of three to develop a robot named STASH, designed for autonomous navigation, precise obstacle detection, and efficient maneuverability in complex, confined spaces.
- Developed control algorithms and integrated ultrasonic sensors with an Arduino microcontroller, achieving efficient hardware-software synergy.
- Optimized system performance through rigorous testing and debugging, enhancing real-time responsiveness and navigation accuracy.

Animal Identification Application 12/2022 – 03/2023

- Designed and developed an animal identification application using Android Studio and Google Vision API, achieving 90% accuracy, facilitating educational and interactive user experiences.
- Integrated computer vision techniques to enhance classification accuracy and real-time performance for educational purposes.

EXTRACURRICULAR ACTIVITIES

Sunhacks ASU Organizing Team 11/2024 – 10/2025

- Plan to collaborate with a diverse team to organize Sunhacks, a large-scale hackathon, by managing logistics, coordinating event schedules, and engaging with participants to foster technical and creative problem-solving skills.

Private Tutor 04/2022 – 04/2023

- Provided personalized tutoring in Math, Science, and English to students, driving improved academic performance and fostering critical thinking in over 10 students.

Volunteer, Annual Day, D.G. Ruparel College 12/2022

- Organized and managed distribution of food and water to over 100 guests, while ensuring smooth event operations.

Creative Head, Dottech Fest, D.G. Ruparel College 01/2023

- Led a group of 35 students in designing and creating props and posters, driving team collaboration and event success.

Volunteer, MARA, Mumbai

- Rescued animals and snakes, ensuring their safety and providing them with appropriate shelter.

Wildlife Tour Operator, Wildscape Expedition, Mumbai

- Guided small groups on wildlife tours, teaching wildlife photography techniques, fostering environmental awareness and skills.

IMPRINT 2023, St. Xavier's College, Mumbai

- Achieved recognition in wildlife photography, winning a monthly feature event organized by IMPRINT magazine.

CERTIFICATIONS

Certified in 'Data Structures and Algorithms' by Arizona State University, January 2025.

Certified in 'Introduction to Gen AI' by Google, October 2024.

Certified in 'Computer Vision' conducted by Udemy, June 2024.

Certified in 'Python with Machine Learning' by SKETO Infotech, Mumbai, June 2023 – March 2024.

Certified in 'Power BI' by SKETO Infotech, Mumbai, December 2023 – February 2024.

Certified in 'Android Application Development' by SKETO Infotech, Mumbai, April 2022 – November 2022.

Certified in 'C, C++' by Keerti Computers, Mumbai, June 2021 – October 2021.