Harshvardhan Nagar

(480) 560-1172 | harshvardhanvn1@gmail.com | https://www.linkedin.com/in/harshvardhannagar-profile

Education

Arizona State University **Tempe, Arizona**
Masters of Science in Computer Science,(GPA: 3.83) May 2026
Relevant Coursework: Data Mining, Fundamentals of Statistical Learning and Pattern Recognition, Natural Language Processing, Data Processing at Scale, Image Processing & Analysis, Knowledge Representation & Reasoning.

Pandit Deendayal Energy University **Gandhinagar, India**
B.Tech in Information and Communication Technology,(CPI: 9.47/10) May 2024
Relevant Coursework: Probability and Statistics for Data Science, Database Management Systems, Big Data Analytics, Machine Learning, Deep Reinforcement Learning, Cloud Computing, Data Structures and Algorithms, Internet of Things.

Technical Skills

Languages and Tools: Python, C/C++, Java, SQL, Bash, Assembly Level Language, Github, Confluence.
AI/ML Libraries: Pytorch, TensorFlow, CUDA, Pandas, NumPy, OpenCV, Scikit-Learn, Matplotlib, Seaborn.
Data Science and Engineering: Databricks, AWS (EC2, S3), Azure, GCP, Snowflake, Apache Kafka, Apache Airflow, Apache Spark (PySpark); Hadoop (Hive, HDFS); OracleDB, PostgreSQL, MongoDB (NoSQL), Power BI, MS Excel.

Experience

Data Analytics, Simulation & IoT, AMI Intern **May 2025 - Present**
MAGNA International Troy, Michigan
- Performed complex data analysis, including predictive forecasting on inventory management with 89% accuracy even with a limited dataset, for Smart Manufacturing, leveraging Databricks.
- Benchmarked cutting-edge vision models (SegFormer, UNet, YOLO, RTMDet, DINO) and commercial platforms (Sony BrainBuilder) by running experiments on real-world plant data; findings directly guided model adoption strategies for the AI Vision Platform.
- Engineered and deployed a custom ROS2 node by integrating a low-cost camera, enabling successful deployment at a Magna plant station, achieving 80% cost savings, and earning accolades from the Senior Leadership.

AI/ML Intern **January 2024 - April 2024**
Brandbook Studio Orissa, India
- Expanded image dataset by 19% through targeted web scraping with BeautifulSoup and Selenium; annotated images using Microsoft Copilot to generate detailed descriptions of object attributes (color, position), ensuring high-quality data for subsequent text-to-image generation.
- Implemented convolutional neural networks (ResNet18, ResNet50) and YOLO for object detection and segmentation, raising accuracy by 12%.
- Explored Generative Adversarial Network(GAN) techniques for image synthesis and leveraged Stable Diffusion, Sora, Llama, and LangChain to drive novel text-to-image generation.

Data Analyst Intern **July 2023 - December 2023**
Roopa Screen Private Limited Ahmedabad, India
- Conducted Exploratory Data Analysis(EDA) and data preprocessing using Python(Pandas) and Excel, cutting 14 hours of manual review per week; leveraged SQL for efficient data extraction and transformation.
- Delivered actionable insights that influenced product improvements by investigating advanced Logistic Regression, Linear Regression, Decision Trees, and Clustering models in Python; performed independent testing on real-world data and collaborated with 3 cross-functional teams to validate findings and translate into strategic recommendations.
- Designed interactive dashboards with comprehensive data visualization tools - Power BI to illustrate key metrics (transaction history, order value, customer satisfaction), contributing to a 27% revenue surge.

Projects

Adversarial Robustness in Time Series Forecasting
- Implemented adversarial attack pipelines (FGSM, PGD) on LSTM and Ridge Regression models, evaluating forecasting degradation using MAE and RMSE across UCI Electricity and M4 datasets, with observed accuracy drops up to 90% in MAPE under attack.
- Engineered preprocessing and feature extraction pipelines including lag features, timestamp normalization, and missing value imputation, enabling robust modeling across irregular, seasonal, and multivariate time series.
- Applied defense strategy using Time Series Adversarial Smoothing (TSAS) on perturbed inputs, reducing error by up to 50% post-attack, demonstrating improved robustness without retraining the model.

Leverage LLMs for Potential SQL Joins
- Developed an evaluation pipeline for join prediction robustness in text-to-SQL, validating LLM outputs against Spider dataset ground truth and mining 249 structured failure cases (76.7% false positives, 23.3% false negatives).
- Built schema-aware SQL parsing and JSON-based prompting workflow, combining sqlglot AST parsing, Gemini API, and schema metadata extraction to ensure reliable and explainable join comparisons.
- Automated error analysis and visualization, implementing restart-safe CSV logging and Matplotlib reports to quantify error distributions across single vs. multi-table joins.