

NEHA KULKARNI

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EDUCATION

Rochester Institute of Technology
Master of Science in Computer Science

Expected Graduation: May 2025
GPA: 3.89/4

NMIMS University
Bachelors of Technology in Information Technology with Honors in AI / ML (with IBM)

Jul 2018 - May 2022
CGPA: 3.62/4 (Dean's List)

EXPERIENCE

Tire Intelligence - Machine Learning Engineer Intern
Goodyear The Rubber and Tire Company

May 2024 - December 2024
Akron, Ohio

- Built a **scalable AWS S3 data pipeline** processing **50 GB of weather API data** and 1M daily data points, enabling efficient model deployment and iterative improvements.
- Implemented and evaluated supervised and unsupervised ML models using **PyTorch** and scikit-learn, achieving a **15% accuracy improvement** over baseline and **94% overall prediction accuracy**.
- Optimized and deployed ML pipelines for **edge computing on Raspberry Pi**, **reducing inference time by 65%** and achieving **real-time forecasting** while adhering to deployment best practices.
- Developed an end-to-end **YOLOv8-based object detection model** in PyTorch for real-time **anonymization of faces and license plates** with **latency below 100ms**.
- Trained the model from scratch achieving 95% detection accuracy across a **custom training set of 60K+ images** and **deployed on edge devices**.
- **Accelerated model training and inference speeds** by 40% leveraging **multi-node** distributed training on **HPC clusters** (NVIDIA A100), while collaborating with **cross-functional teams** to integrate production-ready solutions for real-time data analysis.

Teaching Assistant, CS for AP students
Rochester Institute of Technology

August 2023 - May 2024
Rochester, NY

- Facilitated hands-on coding labs, projects, and assignments in **Python and Java**, providing individualized support and mentoring to AP students.
- **Mentored 80 students** during lab sessions, worked with the instructor to **design supplementary materials**, and enhanced the learning experience by clarifying coding concepts and assisting with debugging.

PROJECTS

Autonomous Parking Using Reinforcement Learning (RL) and Genetic Algorithms (GA) - [Link](#)

Jan 2023 - Mar 2023

- Engineered an autonomous parking system using **Reinforcement Learning** for Dubins' car navigation, improving parking efficiency by **35%** with precise parallel parking and obstacle avoidance.
- Designed a **genetic algorithm** solver, fine-tuning generations and population size via crossover and mutation, reducing computational time by **40%**.
- Achieved **90% success** in simulations, with the RL agent demonstrating improved parking precision and **obstacle avoidance**.

Data Modeling, Analysis, and Mining of Spotify Music Dataset - [Link](#)

Jan 2023 - Mar 2023

- Led and Designed an efficient schema and comprehensive Entity-Relationship Model for a 12M-record Spotify dataset; **optimized SQL queries and indexing**, reducing query time by 40%
- Devised a **MongoDB** (document-oriented) model and benchmarked against SQL, finding **60% better efficiency** in relational databases.
- Applied **itemset mining** using SQL and Python to discover **association rules**, improving system efficiency by 20%, enabling faster order processing and enhanced user experience.

Loan Default Prediction using Gradient Boosting - [Link](#)

Oct 2022 - Jan 2023

- **Reduced loan defaults by 25%** through a gradient boosting model that achieved **91.37% accuracy** in predicting potential default patterns.
- Analyzed **200K+ transactions** to identify key predictive features and preprocessed historical loan data for model training.
- Improved model performance by **20%** through advanced feature engineering and hyperparameter optimization using ensemble techniques.

TECHNICAL SKILLS

- **Programming languages:** Python, Java, C, C++, C#, R, Dart, MATLAB/Simulink
- **Development Tools & Software Engineering:** Git, Unit Testing, System Design, Cloud Architecture, CI/CD Pipelines
- **Cloud & High-Performance Computing:** AWS Services, GPU Clusters, CUDA, SLURM, Distributed Training
- **AI/ML Frameworks:** PyTorch, TensorFlow, Scikit-learn, OpenCV, Object Detection, LLMs Integration and Agents
- **Data Analysis & Engineering:** SQL, Data Visualization, Large-Scale ETL, Data Pipeline Development, Agile/Scrum Methodologies, Exploratory Data Analysis (EDA)

ACHIEVEMENTS

IEEE Publication

First Author of a survey paper on *Machine Learning Techniques for Breast Cancer Diagnosis* highlighting challenges and future trends in breast cancer detection and classification. [\[Paper\]](#)

2022

IBM Technical Presentation

Secured first prize in the technical presentation on "Credit Card Fraud Detection"

2021