

# SARAN KOUNDINYA TUMMALAGUNTA

Buffalo ,New York |6103104318 | koundinyasaran@gmail.com | <https://www.linkedin.com/in/saran-koundinya/> | <https://github.com/sarankoundinya2000>

## SUMMARY

Self-motivated and results-driven software developer with nearly 2 years of industry experience in machine learning and reinforcement learning, specializing in industrial applications. Achieved a remarkable 70% improvement in through innovative equipment health monitoring and fault prediction systems. Successfully led teams to develop proof-of-concept solutions that enhanced early detection of equipment degradation by 25%. operational efficiency and a 40% reduction in downtime

## EDUCATION

University at Buffalo, The State University of New York : **Master of Science: Engineering Science, Artificial Intelligence**  
JB Institute of Engineering and Technology : **Bachelor of Technology: Information Technology**

*Expected Dec 2024*  
*Aug 2017 - Jun 2021*

## SKILLS & TOOLS

**Languages:** C, Python (Pandas, NumPy, Scikit-Learn, Matplotlib, Seaborn, Plot-ly, TensorFlow) , SQL, Java , Big Data Technologies.

**Machine Learning:** Classification and Regression Models, EDA, Feature Engineering, Data Preprocessing, MLOps.

**Deep learning:** Artificial Neural Networks, Convolution Neural Networks, Recurrent Neural Networks

**Reinforcement Learning:** Markov Decision Process based models, Q-learning, Policy Gradient methods, Function Approximations.

**Generative AI:** Language Model (LLM) Development, GPT, BERT, Chatbot Development, RAG.

**Tools:** Tableau, VS Code, GitHub, AWS.

## EXPERIENCE

**Machine Learning Engineer, R&D, AssetSense Technologies Pvt. Ltd ,India**

*Feb 2022 - Jun 2023*

- Identified and extracted more than 50 suitable sensors data for various equipment using Druid queries from the Apache Druid timeseries database, ensuring comprehensive data collection for effective machine health monitoring.
- Enhanced operational efficiency by 70% by preprocessing sensor data using MinMax normalization and clustering operating conditions into distinct states and actions. Visualized the clusters to observe a clear pattern of health degradation, thereby providing actionable insights for predictive maintenance.
- Led the development of a Proof of Concept utilizing **Reinforcement Learning**, resulting in a 25% improvement in the early detection of industrial equipment degradation. Compiled detailed reports with findings and recommendations for enhanced maintenance strategies.
- Achieved a 40% reduction in downtime and a 30% increase in equipment reliability by implementing autoencoder-based anomaly detection techniques in a POC on vibration analysis, predicting component faults through sensor measurements and enabling early intervention.

**Software Engineer Trainee (Machine Learning), AssetSense Technologies Pvt. Ltd.,**

*Aug 2021 - Jan 2022*

- Created 5 insightful visualizations using Matplotlib and Seaborn, boosting data interpretation efficiency by 70% and compiling findings into comprehensive reports.
- Enhanced overall model accuracy by 15% through the identification of data distribution disparities and strategic feature engineering, which included the removal of redundant features.
- Improved fault prediction accuracy by 20% for NASA turbofan data by implementing time series forecasting models, including LSTM, for predicting equipment remaining useful life.

## PROJECTS

**ReadRobo - Intelligent Document OCR and Classification System:**

*(Python, Groq-API, Google-API, ChromaDB)*

- Engineered a scalable OCR application capable of processing and classifying 100+ documents (e.g., Birth Certificates, Death Certificates, Resumes) in various formats, including complex handwritten texts, by integrating advanced AI models from Google.
- Implemented an innovative RAG approach using ChromaDB and LLaMA3 models for intelligent document embedding, retrieval, and classification, enabling precise extraction, organization, and querying of both handwritten and printed legacy records.

**AWS Deep Racer:**

*(AWS Services, Python, RL)*

- Executed an AWS Deep Racer project using AWS Services, Python, and reinforcement learning techniques. Developed autonomous racing models trained and optimized in a simulated environment, achieving a 30% improvement in lap times.
- Successfully navigated competitive tracks, outperforming 80% of AI-controlled opponents in benchmark races. This project demonstrated the application of reinforcement learning in real-time decision-making and autonomous vehicle control, highlighting significant advancements in autonomous racing performance.

**Smart Conversations on Wheels: A Next-Gen Voice Chatbot in Car Showrooms**

*(CNN, TensorFlow, Google-Colab)*

- Developed an advanced voice chatbot for a car showroom, integrating Google Calendar API, speech recognition, and text-to-speech technologies to automate appointment scheduling, respond to car inquiries, and handle customer interactions, resulting in a seamless and engaging user experience. Implemented advanced features such as availability checking, appointment booking, email confirmations, and real-time conversation management.
- Leveraged Groq API for natural language understanding and utilized a sophisticated backend with car inventory management and advanced query handling, ensuring accurate responses and efficient service delivery. Successfully streamlined the customer service process, enhancing overall efficiency and customer satisfaction.

**Optimized Portfolio Management Using Reinforcement Learning:**

*(Google-Colab, RL,Q-learning)*

- Developed and implemented a reinforcement learning-based algorithm for optimizing portfolio management over a 20-day period. Starting with an initial investment of \$100,000, the model effectively increased the account value to \$189,000.
- The project involved training the reinforcement learning model to make strategic buy, hold, and sell decisions to maximize returns while minimizing risk. The approach demonstrated significant potential in enhancing investment strategies through automated decision-making and dynamic risk management.

## CERTIFICATIONS

Python programming by Hacker Rank | Deep learning Specialization offered by DeepLearning.AI | Fundamentals of Visualization with Tableau by Coursera.

## NOTABLE ACTIVITIES

Organized Innovathon 2.0 at JBIET, fostering entrepreneurial ideas | Led departmental seminars | Mentored junior participants in Python programming as a Coding Club instructor.

## PUBLICATION:

Developed and published the “AutogitPy library”, a Python-based automation tool that has garnered over 19,989 downloads worldwide. Streamlines Git operations by automating tasks such as repository cloning, folder management, push-pull operations, and repository information display directly from Python scripts. Significantly improves developer productivity by eliminating manual command-line interactions and optimizing software development workflows.