

Athul Krishna Renjith

Machine Learning Engineer

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Summary

Motivated Machine Learning Engineer with expertise in AI-driven solutions and robotics. Proficient in Python, TensorFlow, PyTorch, and Scikit-learn, with experience in safety-critical applications. Certified by NVIDIA in AI for Predictive Maintenance, skilled in GPU-accelerated XGBoost, RNNs, LSTMs, and anomaly detection. Experienced in robotics integration using ROS and optimizing machine learning algorithms for performance and reliability. Committed to delivering trustworthy, high-performing AI solutions.

Experience

Machine Learning Engineer | UH Racing Autonomous *Oct 2024 - Present*

- Developed autonomous systems by implementing machine learning algorithms to optimize vehicle performance and reliability.
- Leveraged AI techniques to enhance decision-making models, contributing to adaptive and efficient racing strategies.
- Gained hands-on experience with ROS (Robot Operating System) and Gazebo for simulating and testing autonomous systems in realistic environments.
- Achieved 6th place in FS AI UK 2024, showcasing technical expertise and problem-solving abilities in a high-stakes, competitive setting.

Projects

Intelligent Virtual Assistant *Jan 2023 - May 2023*

- Led a team of 5 to develop a virtual assistant that processes voice and text input.
- Used Python's speech recognition library and Flask to make the assistant accessible from any device.
- Integrated IoT functionality using NodeMCU for extended applications.

Telegram Recipe Bot *Apr 2022 - Jul 2022*

- Developed a Telegram bot to suggest recipes based on available ingredients using NLP and image processing.
- Employed the Doc2Vec model for efficient recipe suggestions and supported over a million recipes from multiple cuisines.

Education

M.Sc. Artificial Intelligence and Robotics | University of Hertfordshire *Jan 2024 - May 2025*

GPA: 4.5/4.5

- **Neural Networks and Machine Learning:** Proficient in MATLAB and R for tasks like K-means, PCA, and KNN. Gained expertise in deep learning and implemented ML algorithms such as SVM and ensemble methods. Explored regularization techniques and utilized LIBSVM.
- **Artificial Intelligence:** Proficient in PyCharm for AI development. Designed solutions for problems like the Nim Game, 6 Coins Problem, and Hero/Sidekick Problem using Breadth-First Search (BFS). Applied Bayesian Probability in AI problem-solving.
- **Artificial Life and Robotics:** Skilled in NetLogo for agent-based modeling, creating simulations. Developed Ant Colony Optimization in Python and applied Genetic Algorithms. Hands-on experience with Unity for robotics simulations, including physics, sensors, autonomous motion, obstacle detection, and track navigation.

BTech in Computer Science and Engineering | APJ Abdul Kalam Technological University *Aug 2019 - Aug 2023*

CGPA: 8.63/10 (First Class with Distinction)

- **Object-Oriented Programming (OOP) Using Java:** Developed proficiency in Java, focusing on object-oriented design principles like inheritance, polymorphism, and encapsulation to build scalable and maintainable applications.
- **Programming in C:** Gained strong foundational knowledge of C programming, emphasizing low-level memory manipulation, pointers, and algorithm implementation for efficient computational solutions.
- **Database Management Systems:** Mastered SQL for database design, normalization, and optimization, focusing on complex queries, indexing, and transactions for managing large datasets.
- **Compiler Design:** Developed assembly programming skills, focusing on low-level optimization, and the design and implementation of compilers and interpreters.

Skills

- Proficient in C, Java, and Python programming languages.
- Experienced with AI/ML frameworks such as TensorFlow, Keras, and Scikit-learn.
- Skilled in using NumPy, Pandas for data manipulation, and Matplotlib.
- Proficient in Git for version control.
- Well-versed in Robot Operating System (ROS).

- Knowledgeable in machine learning, neural networks, and artificial intelligence techniques for solving real-world problems.

Awards and Certifications

Implement a Data Science and Machine Learning Solution with Microsoft Fabric | MICROSOFT *January 2025*

Gained hands-on experience in building end-to-end data science solutions using Microsoft Fabric. Worked with Python, MLflow, Synapse Data Science, and SynapseML to ingest, explore, and prepare data, train and evaluate machine learning models, track experiments, and generate predictions. Strengthened expertise in data transformation, model management, and AI-driven insights.

Applications of AI for Predictive Maintenance | NVIDIA *January 2025*

Completed a hands-on certification on AI-driven predictive maintenance, covering GPU-accelerated XGBoost models with RAPIDS, RNN and LSTM design in Keras, and anomaly detection using autoencoders. Gained expertise in handling noisy and imbalanced time-series data, optimizing models, and evaluating performance using F1 scores and confusion matrices.

Jithy P K Memorial Award | APJ Abdul Kalam Technological University *August 2023*

Recognized as the best student overall in the 2019-2023 B.Tech batch for outstanding academic performance and contributions to the university community.