

SADANAND GIRADDI

· sadanandvg14@gmail.com · <https://www.linkedin.com/in/sadanand-vithal-giraddi> · (+44) 7776830094
· <https://github.com/saduabhi> · United Kingdom (ready to relocate)

Personal Summary

Data Driven Machine Learning Engineer with a Master's degree in Robotics and Autonomous Systems, and expertise in geometric deep learning and industrial machine learning applications. Adept at solving complex engineering challenges through machine learning and optimization. Eager to contribute to Compute Maritime's mission in transforming the maritime industry with AI-driven solutions, leveraging high-performance computing, and quantum technologies for sustainable outcomes.

Education

MSc Robotics and Autonomous Systems | University of Lincoln, England, United Kingdom |
October 2021 – October 2022

- **Graduated with Distinction (70%)**
- **Relevant Course modules:** Advanced Artificial Intelligence, Advanced Machine Learning, Computer Vision, Robot Programming, Advanced Robotics, Frontiers of Robotics research.
- **Dissertation: Brain tumor Segmentation of 3DMRI images using 3D U-Net Model Architecture.**
 - **Problem:** Accurately segment brain tumor sub-regions from 3D MRI images for diagnosis and treatment planning.
 - **Approach:** Designed and implemented a 3D U-Net model architecture tailored for brain tumor segmentation, leveraging advanced AI techniques.
 - **Outcome:** Achieved significant improvements in Dice scores: 80% for enhancing tumor, 78% for edema, and 88% MeanIoU for necrotic tumor core. Optimized hyperparameters and analyzed the BraTS 2021 dataset, benchmarking against state-of-the-art algorithms.

Bachelor of Technology in Mechanical Engineering | SET Jain University, Bangalore, India |
August 2015 – August 2019

- **Graduated with Distinction (82.40%)**
- **Relevant Course Modules:** Mechanical Design, Fluid Dynamics, Control Systems, Robotics and Automation, Control systems, Automation, Applied Mathematics, Computer Science
- **Research Project: Development of Arduino-based Omni Wheel Plotter** has been published in International Journal. [View Publication](#)

Technical Skills:

- **Programming Languages:** Python, SQL, R, MATLAB, C++
- **Machine Learning & AI:** Geometric Deep Learning, Predictive Modeling, Design Optimization, Simulation & Engineering Applications, Supervised & Unsupervised Learning, Deep Learning Architectures (CNN, RNN, Transformer)
- **Machine Learning Frameworks & Tools:** TensorFlow, MLflow, PyTorch, Keras, Scikit-learn, LangChain
- **Industrial Applications:** CAD/CFD/FEA Modeling, Optimization, Simulation Engineering
- **MLOps & Software Engineering:** MLOps (Model Deployment, CI/CD Pipelines, Testing), Version Control (Git, GitHub, GitLab), API Design, Docker, Kubernetes, Cloud Environments (AWS, Azure, GCP)
- **Data Science & Analysis:** Data Representation & Processing, Data Pipelines, Data Visualization (Matplotlib, Seaborn), Statistical Analysis
- **Cloud Platforms:** AWS, Azure, GCP
- **Operating Systems:** Linux (Ubuntu), Windows
- **Soft Skills:** Passionate | Problem-Solving | Attention to Detail | Communication | Collaboration | Verbal Communication | Technical Documentation | Analytical | Innovative Solutions | Customers Service | Professional growth | Responsibilities | Strategic | Confidentiality | R&D | Technology Platform | Learning Techniques

Certificates

- **MTA:** Database Fundamentals, Introduction to Programming using Python
- **Microsoft:** Azure Fundamentals, Azure AI Fundamentals, Azure Data Fundamentals
- **Google Cloud:** Big Data and Machine Learning Fundamentals
- Complete MLOps Bootcamp With 10+ End To End ML Projects
- Generative AI: Introduction and Applications (IBM-Coursera)
- Linux for Robotics (The Construct)

Achievements

- Distinction for Master's (MSc) and Bachelor's (B.Tech) Thesis Research in Robotics - AI and Mechatronics.

Professional Experience

Associate - Sortation Operative at Amazon | Glasgow, Scotland | April 2024 to December 2024

- **Optimized Workflow:** Supported automated sorting systems, contributing to operational efficiency and high-performance targets by utilizing advanced automation and data tracking techniques.
- **Problem Solving:** Collaborated with cross-functional teams to diagnose and resolve workflow bottlenecks, improving efficiency.
- **Team Leadership:** Trained and guided new hires, ensuring smooth handovers and compliance with quality standards.
- **Performance Recognition:** Acknowledged by peers and leadership for problem-solving skills, teamwork, and contributions to optimizing sorting operations, reflecting a focus on continuous improvement and scalability.

Internship - Artificial Intelligence Master Class using Python | Pantech Solutions, India | October 2020 – November 2020

Projects worked on Artificial Intelligence, Machine Learning, Computer Vision, and Deep Learning:

- Developed advanced AI chatbots with DialogFlow, showcasing strong natural language understanding.
- Implemented supervised and unsupervised learning algorithms (linear regression, decision trees, neural networks).
- Utilized TensorFlow, PyTorch, and scikit-learn to build scalable models for high accuracy.
- Managed end-to-end MLOps workflows, ensuring seamless integration and deployment of AI/ML models.
- Optimized models for efficiency and reliability in production environments, utilizing robust testing frameworks.

Technical Projects:

Robot Programming – Autonomous Grape Bunch Detection and Tracking:

- **Problem:** Developed a robotic system to autonomously detect and track grape bunches in vineyard maps, enhancing precision agriculture.
- **Approach:** Implemented Python scripts on ROS platform, integrating SLAM (Simultaneous Localization and Mapping), segmentation, and object detection using OpenCV and TensorFlow.
- **Outcome:** Successfully generated bounding boxes and tracked trajectories for detected grape bunches, demonstrating the viability of robotic solutions in agriculture automation. Designed and simulated a robotic navigation system using ROS and Gazebo.

Advanced Artificial Intelligence

1. Reinforcement Learning Game - AI-Based Game Character Control

- **Problem:** Developed AI algorithms to control character "Tallon" in the Mean Arena game technology, focusing on survival and collecting bonuses while avoiding monsters and hazards.
- **Approach:** Implemented Python scripts using Markov Decision Process (MDP) and Value Iteration algorithms for fully and partially observable game scenarios across different arena sizes.
- **Outcome:** Demonstrated AI's capability to optimize Tallon's actions for maximum survival time and bonus collection, showcasing proficiency in game AI and algorithm implementation.

Advanced Machine Learning

1. Medical Image Analysis with CNN and Transfer Learning

- **Problem:** Developed methods to accurately detect pneumonia in medical images, crucial for early diagnosis and treatment of respiratory diseases.
- **Approach:** Utilized transfer learning with CNN architectures such as ResNet50 and VGG16, leveraging pre-trained models for pneumonia detection.
- **Outcome:** Successfully fine-tuned models and evaluated their performance, showcasing transfer learning's effectiveness in medical image analysis.

2. Deep Reinforcement Learning for Game Autonomy

- **Problem:** Used DRL agents (PPO, DQN, A2C) to autonomously play gym-super-Mario-bros using image inputs.
- **Approach:** Employed stable-baselines to train over 1 million steps, with hyperparameter tuning and specific training of PPO agent for 3000 episodes. Evaluated metrics like Average reward, game score, steps per episode, Q-value, and training times.
- **Outcome:** Demonstrated effective DRL application in achieving competitive autonomous gameplay, enhancing agent performance and understanding in dynamic environments.

Computer Vision – Image Segmentation, Feature Extraction and Object Tracking

- **Problem:** Developed computer vision solutions for medical imaging and video analysis, focusing on image segmentation, feature extraction, and object tracking.
- **Approach:**

Segmentation: Utilized morphological operations to perform automated skin lesion segmentation, achieving high accuracy measured by the Dice similarity score.

Feature Extraction: Applied spectral methods to extract both spatial and frequency domain features from images, enhancing analysis capabilities.

Object Tracking: Employed a Kalman filter for precise tracking of moving targets in noisy data environments, improving tracking reliability.

- **Outcome:** Achieved precise lesion detection, optimized feature extraction methods, and enhanced object tracking accuracy using MATLAB.