Harish Kumar Rajagopal

Tiruchirappalli, Tamil Nadu harishkr12122003@gmail.com 8078941791 in/harish-kumar-rajagopal

EDUCATION

Bachelor of Science in Computer Science

SRM Institute of Science and Technology • Tiruchirappalli , Tamil Nadu
, 2022 - current

Higher Secondary Education

Palaghat Lions School • Palakkad, Kerala • 2018 -2022

PROJECTS

Atari Breakout with Deep Reinforcement Learning

August 2024 - Present

- **What** :The Deep Q-Learning for Breakout project involves training an AI agent to play Atari Breakout using Deep Q-Networks (DQN), where the agent learns through interactions with the game. The setup utilizes Open AI Gym's Atari environment to simulate the game, combining reinforcement learning and neural networks to predict optimal actions for the agent as it navigates the game.
- **How** : The process works by feeding pixel-based game screens as input to the AI. The agent selects moves such as left, right, or stay, based on Q-value predictions. It learns from the rewards gained when breaking bricks and penalties incurred from missing the ball. The agent undergoes multiple episodes of training, gradually improving its gameplay by storing and replaying past experiences, which helps stabilize learning.
- **Impact** :As a result, the AI eventually becomes proficient at Breakout, often surpassing human performance. The techniques used in this project extend beyond gaming, with potential applications in robotics, autonomous systems, and other environments requiring dynamic decision-making. It highlights AI's efficiency in learning complex tasks from raw data without the need for explicit programming.

AI-Powered Solar Power Efficiency Calculator

- **What:** Built a web application to optimize the efficiency of solar panels using AI and machine learning models.
- **How:** Developed the application with React and Node.js, incorporating machine learning models to analyze environmental factors and predict optimal efficiency.
- **Impact:** Enabled users to maximize solar energy utilization, leading to cost savings and promoting sustainable energy practices.

Chatbot for Customer Support

- **What:** Created a chatbot to automate and enhance customer support services.
- **How:** Implemented natural language processing techniques using Python and TensorFlow, ensuring accurate and helpful responses to user queries.
- **Impact:** Improved response times and user satisfaction by providing instant and accurate support, reducing the workload on human support agents.

IoT-Based Ammonia Detector

- **What:** Developed an ammonia detection system to monitor and alert industrial environments of hazardous ammonia levels.
- **How:** Utilized Arduino and gas sensors to create the detection system, ensuring accurate and reliable readings through extensive testing and calibration.
- **Impact:** Enhanced safety in industrial settings by providing early detection of ammonia leaks, preventing accidents and health hazards.

Ultrasonic Sensor System for Accident Prevention

- **What:** Designed a system to prevent vehicular accidents by detecting potential collisions using ultrasonic sensors.
- **How:** Integrated machine learning algorithms with ultrasonic sensors to provide real-time collision alerts, overcoming challenges in sensor calibration and algorithm accuracy.
- **Impact:** Significantly reduced the likelihood of vehicular accidents, enhancing road safety and reducing potential damages.

SKILLS

- **Web Development:** HTML, CSS, JavaScript, React, Node.js
- **Programming Languages:** Python, Java, C++
- **Databases:** MySQL, MongoDB
- **Tools and libraries :** Open AI Gym, Scikit-learn, Pandas, NumPy