

TASK 4: Mini Project – Role of AI in Autonomous Robots

Intern Details

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Abstract

This mini project explores the role of Artificial Intelligence in autonomous robots. AI enables robots to perceive, learn, reason, and make decisions independently.

Introduction

Autonomous robots operate without continuous human intervention. Artificial Intelligence is the core technology that enables perception, decision-making, and adaptive behavior.

Role of AI

AI provides capabilities such as machine learning, computer vision, natural language processing, and SLAM. These technologies allow robots to navigate environments, analyze data, and interact intelligently.

Architecture

An AI-based robot consists of sensors, data processing units, AI algorithms, decision modules, and actuators. The process flow follows: Environment → Sensors → Processing → AI Decision → Action.

Applications

AI-powered autonomous robots are used in self-driving vehicles, drones, warehouse automation, healthcare robotics, and smart manufacturing.

Advantages and Challenges

Advantages include adaptability, predictive maintenance, and real-time decision-making. Challenges include computational complexity, safety assurance, and regulatory concerns.

Future Scope and Conclusion

AI will continue to drive innovation in robotics through edge computing, collaborative robots, and humanoid systems. Artificial Intelligence remains the backbone of next-generation autonomous systems.