PANIMALAR ENGINEERING COLLEGE
An Autonomous Institution

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Bangalore Trunk Road,Varadharajapuram, Poonamallee, Chennai- 600 123

TECHDIVATHON

Empower, Innovate, Elevate: Code the Future Together

Domain: ROBOTICS

Problem Statements:

Sno	Title	Problem Statement	Description
1	Obstacle-Avoiding Robot	Traditional robots struggle to navigate independently in unknown environments.	Uses ultrasonic sensors to detect obstacles and navigate autonomously without external intervention.
2	Line-Following Robot for Automation	Automating repetitive tasks in industries and warehouses requires simple yet efficient solutions.	Tracks predefined paths for performing basic automation tasks in industrial or educational setups.
3	Robotic Arm for Object Sorting	Sorting objects manually is time-consuming and prone to errors.	Equipped with sensors to sort objects by size or material, improving efficiency in manufacturing and logistics.
4	Smart Surveillance Robot	Ensuring constant surveillance in large areas can be resource-intensive.	Patrols designated areas and streams live video to a centralized dashboard for monitoring.
5	Robotic Trash Collector	Litter collection in public spaces often requires significant manual effort.	Identifies and collects trash using basic sensors, promoting cleaner environments.
6	Warehouse Automation Robot	Managing inventory movement in warehouses can be inefficient and labor-intensive.	Transports items autonomously between shelves, streamlining warehouse operations.
7	Gesture-Controlled Robot	Controlling robots via conventional methods can be unintuitive for some users.	Operates based on hand gestures, offering a user-friendly and innovative control method.
8	Solar-Powered Agricultural Robot	Agricultural machinery often relies on non-renewable energy sources.	Assists in plowing and planting tasks using solar power, promoting sustainable farming practices.
9	Real-Time Obstacle Mapping Drone	Navigating and mapping obstacles during flight is crucial for drone applications.	Creates real-time maps of obstacles to enhance navigation and situational awareness.
10	Low-Cost Education Robot for Beginners	Robotics education is often inaccessible due to high costs.	Provides an affordable platform for teaching basic coding and robotics concepts to beginners.
11	Robot Control and Monitoring Dashboard	Monitoring robot performance and controlling them remotely can be complex.	Tracks robot performance metrics and provides a remote control interface for seamless operations.

12	AI-Based Path Planning for Robots	Navigating dynamic environments efficiently is a challenge for robots.	Utilizes artificial intelligence to find optimal paths, enabling robots to adapt to changing scenarios.
13	Gesture Recognition Software for Robots	Robots lack intuitive interaction mechanisms for human users.	Detects hand gestures to control robot functions, enhancing human-robot interaction.
14	Speech-Controlled Robot Interface	Robots need hands-free control methods for diverse applications.	Operates robots through voice commands, providing an accessible control interface.
15	AI-Driven Object Detection System for Robots	Identifying and interacting with objects is essential for robot functionality.	Enables robots to recognize and interact with objects accurately using AI-based detection.
16	Real-Time Obstacle Detection System	Robots require fast obstacle detection to prevent collisions.	Uses computer vision to identify and avoid obstacles in real time, ensuring smooth navigation.
17	Robot Fleet Management Software	Coordinating multiple robots in large operations is challenging.	Manages and controls a fleet of robots working collaboratively to optimize tasks.
18	Simulation Tool for Robotic Movements	Testing robotic behavior in real environments can be costly and time-consuming.	Simulates robot movements in virtual environments to evaluate performance and functionality.
19	Learning Algorithm for Robotic Tasks	Robots lack adaptability to changing user needs or task variations.	Enables robots to refine actions based on user feedback, improving task execution efficiency.
20	AI-Powered Vision for Robots	Robots need enhanced object recognition for advanced applications.	Enhances the ability to detect, recognize, and track objects using AI-powered vision systems.
21	AI-Powered Pick-and-Place Robot	Sorting and placing objects manually is inefficient and prone to errors.	Automates sorting and placement tasks using AI-driven precision and adaptability.
22	Self-Navigating Delivery Robot	Delivering goods autonomously requires precise navigation and obstacle avoidance.	Maps surroundings and autonomously delivers items, ideal for last-mile delivery applications.
23	Robotic Lawn Mower	Lawn mowing can be labor-intensive and time-consuming.	Cuts grass autonomously using sensors and app-based controls for efficient lawn care.
24	Robot-Assisted Classroom Teaching Aid	Teachers need interactive tools to engage students in learning.	Supports teaching through AI-driven interactive modules, enhancing classroom engagement.
25	Real-Time Farming Assistance Robot	Managing farming tasks manually limits productivity and precision.	Automates seeding and monitors crop health in real time, optimizing agricultural operations.