

I-Tech System

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Robotics Project List

List of Robotics Project Ideas:

- 1. DTMF Controlled Robot without Microcontroller:** The main aim of this project is to control a robotic vehicle by giving the instruction through mobile phone using DTMF technology. This can be used for surveillance systems and industrial applications.
- 2. Microcontroller Based Line Following Robot:** This project illustrates the concept of tracking or following the path specified to a robotic vehicle using AVR microcontroller. This project uses IR sensor to detect the path specified by the user.
- 3. War Field Spying Robot With Night Vision Wireless Camera:** This project implements a remote controlled spy robot which would be helpful in the event of wars. A night vision capability of wireless camera attached with this robot provides the spying information even in darkness using infrared lighting.
- 4. PC Controlled Human Detection Robot:** This project aims to detect humans through a robotic vehicle by using IR sensors and microcontroller unit. This project is very helpful in the time of earthquakes to detect personnel.
- 5. GSM Mobile Phone Controlled Intelligent Robot:** The idea of designing this project is to control the movements or motion of robot using GSM technology that means by sending SMS to the remote robot control unit, robot movements can be controlled.
- 6. Metal Detector Robot Using Microcontroller:** A metal detector robot is useful to sense metals in the path ahead of it. This will be a necessary requirement in case of land mine detection. So this project meets the requirement with a simple microcontroller-based robot.
- 7. Design of Rescue Robot and Pipeline Inspection Using Zigbee:** This project aims to design a rescue robot for the rescue of a child in a borehole according to commands given by the user from PC. This project also consists of a pick and place arm and wireless camera to achieve desired performance.
- 8. MEMS Sensors Controlled Haptic Forefinger Robotic Aid:** This project deals with the control of forefinger direction based path way robot for aiding physically challenged people. This design uses MEMS sensor, RF module and microcontroller to achieve the operation.
- 9. Mobile Robot Navigation System with RFID and Ultrasonic Sensors:** This is an intelligent navigation method for indoor mobile robotic vehicles. RFID tags attached

in the robotic environment help to navigate the robot in a desired path while ultrasonic sensors are used to detect the obstacles in the path.

10. **Design of an Unmanned Vehicle using a GSM Network with Microcontrollers:** This project implements a unmanned robotic vehicle with remote control operation set by the GSM network by replacing RF circuits which suffers from drawbacks like limited control and limited frequency range.
11. **Obstacle Avoiding Robot:** This is an autonomous intelligent robot which is built with infrared sensors to sense the obstacles coming in the path of the robot and correspondingly changes the direction of the robot.
12. **Bluetooth Controlled Robot Using Android Smart Phone:** The purpose of this project is to control the motion of a robot using an application of Android smart phone. A wireless communication between the smart phone device and robotic vehicle is established by Bluetooth technology.
13. **Autonomous Farming Robot with Plant Health Indication:** This system is designed to implement an autonomous farming robot which monitors the health condition of plants, senses the surrounding environmental conditions and pour-out the water depends on moisture content. This project uses ARM controller as central controlling unit.
14. **Implementation of Land Survey Robot:** This project implements a design which is used to conduct the land survey in order to calculate the area of that land and to divide it into subplots. Along with microcontroller, Zigbee module is attached to the robot to transfer the field data to control area.
15. **Automatic Fire Sensing and Extinguishing Robot:** This project aims to develop a multi flame sensor based fire fighting robot. If the fire takes place, the robot moves towards the fired area and starts sprinkling the water from water pump attached to it.
16. **Automatic Wall Paining Robot:** The primary object of this project is to implement a wall painting robot which automatically paints the wall of given dimensions using major components as IR sensors, microcontroller and DC motor.
17. **Design of GPS-Guided Mobile Robot:** This robot is designed to be a autonomous by detecting its surroundings and to navigate accordingly by using GPS module attached to it. It also equipped with ultrasonic sensors to detect the obstacles.
18. **A Microcontroller Based Four Fingered Robotic Hand:** This project deals with design of a four fingered robot arm using wireless feedback, sensors and microcontroller unit. By using this project we can implement 14 independent commands for all fingers.
19. **Autonomous Surveillance Robot with Path Tracking Capability:** The idea of this project is to build an autonomous robot for surveillance applications with additional capabilities like pattern recognition, path tracing, fire detection and obstacle detection.

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- 21. Remote Controlled Pick and Place Robotic Vehicle:** This robotic vehicle is designed to pick and place the objects from one place to the other in an industry remotely using wireless communication method.
- 22. Rope Traversing Robot with Surveillance Capability:** This robot is designed to have capabilities of traversing in both horizontal as well as vertical directions with camera mounted on the top of that robot for surveillance purpose.
- 23. Voice Controlled Robotic Vehicle:** The main purpose of this project is to operate the robotic vehicle based on voice commands given by the user. The Speech recognition module, RF transmitter & receiver and microcontroller unit are the primary components in this design.
- 24. Mobile Phone Controlled Four Legged Walking Robot:** This type of robot is implemented to overcome the disadvantages of wheels based robot which cannot work on hilly or rocky terrain. So this walking robot can able to access the challenging terrains using servo motors with additional capabilities like obstacle avoidance, remote control through GSM, etc.
- 25. Arduino Operated Robotic Lawnmower Power by Solar Energy:** This robot is designed to mow the grass in the garden within a defined area by avoiding all the obstacles. The entire circuit is powered with solar energy with Arduino controller as central control element.
- 26. Automated System Design for Metro Train:** This is an automated system for a metro train which announces the station name and displays the relevant information when train arrives at particular station. In this, RFID tags are used for tracking the station data.
- 27. Design of a Surface Cleaning Robot:** This project illustrates the design of surface cleaning robots which are used to collect the floating garbage in rivers, coastal waters and lakes. This project implemented by using AVR controller with RS485 communication.
- 28. Intelligent Gesture Controlled Wireless Wheelchair:** This project controls the wheelchair of a disabled person in a hand motion based gesture interfaces controlled by a microcontroller. In addition to this, wireless gesture control is also attached with this system for remote control operation.
- 29. Accelerometer Based Robot Motion and Speed Control with Obstacle Detection:** This is an ARM controller based project which controls the robot based on accelerometer gesture recognition technique. For establishing the communication between the controller and robot, a Zigbee module is interfaced to the circuit.

- 30. Color Guided Material Handling Robot:** The main idea of this project is to build a color detecting robot which separates the objects that are moving on a conveyor belt in an industry. This project uses MATLAB to develop color detection algorithm.
- 31. Design and Development of Wall Climbing Robot:** This design gives a robot with wall climbing capability so that which can stick and move over vertical as well as inclined surfaces. A stepper motor with a microcontroller is used for achieving the operation.
- 32. Web Based Embedded Robot For Safety And Security Applications Using Zigbee:** This project develops an embedded system for security and safety robotic vehicle using microcontroller with attached Zigbee module and web server. It collects the sensors data like intruder detection and gas leakage and then send to the Zigbee module for alarming purpose.
- 33. An RFID Warehouse Robot:** This project is intended to build an autonomous robot which has the ability to identify the items, picking up, and placing in a desired location with line follower module and RFID technology.
- 34. Wireless Surveillance Robot with Motion Detection and Live Video Transmission:** This project aims to detect and recognize motion automatically around the robot environment in order to perform the surveillance operation with video transmission capability using PIC microcontroller.
- 35. Arduino Based Smart Boat with Obstacle Detection:** This is a simple DIY project which helps to design a boat with additional features like light guided control and obstacle detection.
- 36. Touch Screen Controlled Multipurpose Spy Robot Using Zigbee:** This is a multipurpose robot vehicle which can be used for different robot applications. This project consists of touch screen form which we can send commands to the robot via Zigbee module to the robot circuit which is implemented by using microcontroller.
- 37. Design of Microcontroller Based Edge Avoider Robot :** This project implements a robot which can avoid edge by detecting early and takes further action in time. This project also includes path finding, obstacle detection and line follower capabilities.
- 38. A Domestic Robot for Security Systems Using Zigbee Technology:** This project uses PIR sensors, ultrasonic sensor and camera to build a robot with automatic door locking system to provide the security in homes. This project uses Zigbee technology to send the information to the remote controlled area.
- 39. PIC Microcontroller Based Auto Tracking Robot:** This project is implemented with optical sensors to indicate the location of the line and PIC microcontroller to calculate the position of robot from sensor data and to adjust the motors of the robot such that it follow the line of desired path.
- 40. Arduino Based Photovore or Light Seeking Robot:** The objective of this project is to implement a robotic vehicle which can be controlled by light without human interference, in other words we can call it as light following robot. This project built with Arduino controller with obstacle detection capability.

- 41. Automatic Scrap Collecting Robot:** The main intention of this project is to design a robot that can collect scrap in given specified area with motion control and arm control capabilities.
- 42. Design and Implementation of Snow Plow Robot:** This project implements a snow plow vehicle by using Arduino uno board. It works on the commands sent from RF communication device so that robot movements as well as plow are controlled in a desirable way.
- 43. Design of RF Based Speed Control System for Vehicles:** This proposed project automatically reduces the speed of a vehicle in the places where sign boards are placed on highways. RF transmitters are placed at the sign boards whereas receivers are placed in the vehicles. Therefore, speed of the vehicles are controlled when vehicle come across these boards.
- 44. Control of Mobile Robot for Pipe Line Inspection:** The design of mobile robot for inspecting pipe lines is implemented by this project by equipping required sensors to the robot. This robot is controlled by a microcontroller unit along with GSM module and camera.
- 45. Automatic Steering Control robot:** This project proposes an automatic steering method for vehicles with manned as well as unmanned mode with automatic electronic clutch and pulleys.
- 46. Eye-Base Domestic Robot Allowing Patient to Be Self-Services and Communications Remotely :** This project aims to aid patients so that they can be self-sufficient in domestic as well as hospital circumstances by designing an eye based robot.
- 47. Autonomous Robot for Target Detection and Shooting:** The main objective of this project is to design cost effective autonomous robot for automatically finding target, locking it and hits by a shooting mechanism using image processing technique.
- 48. Design of a Robot for Application in the Electrical Field with Narrow and Hazardous Space:** This project implements a robot which would work in hazardous environment such as boilers in power generation, electric welding systems, etc. The data acquisition and control of this robot achieved by PLC and SCADA systems.
- 49. Solar Powered Automatic Paddy and Corn Collector Robotic Vehicle:** The aim of this project is to aid farmers for harvesting and collecting the paddy crops in the field with blades attached to the robotic arm. This project uses solar power to energize the entire circuit.
- 50. Voice Operated Intelligent Elevator:** The idea of this project is to design a voice controlled intelligent elevator which uses speech recognition technology to control the elevator. This also helps to turn the fans, lights and door in the elevator through voice commands.
- 51. Self-rappelling Robot System for Inspection and Rescue Applications:** This project describes the design of self-rappelling search and rescue robot which can move over chaotic rough structures with rappelling and winching capabilities.

- 52.Design of Cleaning Robot System to External Glass Walls of Buildings:** This type of design of a robot is used for cleaning and washing of frontage buildings with glass walls. A climbing robot which is capable to climb on glass structure is implemented in this project.
- 53.Implementation of Self Balancing Robot:** The aim of this project is to demonstrate the balancing of an unstable robot with two wheels. This project uses an Arduino controller for discrete digital control to get the stability.
- 54.FPGA Based Robotic Arm with Six Degrees of Freedom:** The main aim of this project is to design a multipurpose robotic arm with 6 degrees of freedom to achieve high performance with greater accuracy. This system uses FPGA for control and processing the design.
- 55.Vehicle Anti Collision Using Ultrasonic Signals:** This project proposes an active vehicles anti collision system by using ultrasonic range finder along with GSM module. This system not only alerts the driver but also actuate the safety switches automatically.
- 56.Implementation of Self Parking Robotic Car:** This design implements a self and automatic parking system to park a car by making use of various sensors like infrared range finders, sonars and camera.
- 57.Design of a Wireless Gesture Controlled Robotic Arm with Vision:** This project deals with the design of robotic arm based on the accelerometer system. This system controls the robotic arm wirelessly via RF signals using 3-axis accelerometer.
- 58.Implementation of Cube Solving Robot:** This project implements a robot with cube solving capability within a short duration by using mechanical structure, color identification sensor and an algorithm to solve the cube.
- 59.An RFID Based Serving Robot :** This type of design of robot is intended to increase the efficiency of food serving to customers in hotels by decreasing the waiting time. This project uses PIC microcontroller and RFID technology to implement the required operation.
- 60.Head Motion Controlled Robotic Vehicle:** The idea of this project is to aid the paralyzed or disabled people by implementing automated wheelchair. Head movements of the user can control the motion of the wheelchair using accelerometer sensors.
- 61.Arduino Based Quadruped Robot:** This project implements a simple and cost-effective quadruped walking robot with two servos controlled with Arduino uno controller.
- 62.Intelligent Data Acquisition Robot for Industrial Monitoring:** This robot is designed to acquire the industrial parameters and to send them to a centralized control area via RF communication. This robot is equipped with line following as well as motion detection capabilities.

- 63. Smoke and LPG Gas Detection Robot with Wireless Control:** This proposed system is useful for underground and mining applications for detecting the smoke and LPG detection. The sensed or detected data is transmitted to the control area using RF communication technology.
- 64. Autonomous Indoor Helicopter Flight using a Single Onboard Camera:** The goal of this project is autonomously flying a helicopter using closely integrated onboard single camera in indoor environments so that navigation performed with camera alone.
- 65. Garbage Collection Robot Using Wireless Communication Technology:** The main objective of this project is to implement a garbage collection robot with facility to be operated remotely. This project is built with PIC microcontroller, Bluetooth technology and wireless camera.
- 66. Design of Amphibian Robot:** This project deals with the design of amphibious robot which is a water-resistive robot that can be used on rough terrain and under water to accomplish the desired tasks. This also equipped with self navigation system.
- 67. A Socially Assistive Robot for the Elderly and Cognitively Impaired :** The goal of this design is to provide the assistance for cognitively impaired as well as elders by implementing social assistive robots which helps them to do self maintenance and activities of daily living.
- 68. Implementation of Lane Detection Autonomous Car Using Raspberry Pi:** The objective of this project is to implement a monocular vision autonomous vehicle with lane and obstacle detection capabilities using Raspberry Pi.
- 69. Arduino Based Robotic Manipulator:** The idea of this design is to implement a robotic arm which is programmed with similar functions that have on a human arm. This manipulator design is implemented by using Arduino controller.
- 70. Design of Fruit Plucking Robot:** This project introduces the new robotic harvesting technology to increase the harvest efficiency of the labor in order to pick the fruits from trees when they are ripen by implementing an autonomous robot.
- 71. Design of simple Roller Robot with Wireless Camera:** It is small roller type of robot implemented with two wheels and wireless camera which can be controlled via handheld terminal control unit.
- 72. Automation of Object Sorting Using an Industrial Robot:** This project aims to build a machine vision based robotic vehicle which is helpful for sorting the objects in a predefined quality of groups by inspecting the color of the object with camera. This also includes the pick and place robotic arm.
- 73. Monitor and Control of an Excavator Robot:** The purpose of this project is to implement a remote control operation for commercially available excavators through the use a Graphical User Interface so that movements of excavator are controlled by observing site conditions in GUI.

- 74. An Intelligent Combat Robot:** This intelligent combat robot consists of two barrel turrets through which bullets can be fired. This entire robot is controlled remotely via RF module with camera attached with the robot.
- 75. Design of Intelligent Solar Tracker Robot for Surveillance:** The main objective of this project is to generate the maximum solar power from solar panel by tracking the sun. This solar energy is further utilized for energizing the robotic vehicle and surveillance cameras.
- 76. Implementation of an Omni Wheels Robot:** The goal of this design is to build an easy to assemble and cost-effective omni-directional robot which allows the new kind of movements. This project is implemented on Arduino platform with motor driver circuit.
- 77. Design and Implementation of Intelligent Ground Vehicle:** The main challenge of this project is to design a high reliable autonomous robot which can move or navigate from one location to the other. This project also includes mapping, localization and path tracking capabilities.
- 78. Implementation of Ball Tracking Robot:** The objective of this project is to implement an object tracking robotic vehicle for automated surveillance by using image processing technique.
- 79. Car Driving System to Assist the Physically Challenged Persons:** This project demonstrates the gesture controlled car driving system which enables a physically challenged person to drive the car by sending the head movement from the device attached with his/her neck.
- 80. Wi-Fi Based Robot Control by Webpage Interface:** It is a concept of designing Wi-Fi controlled robotic vehicle by which we can control the robot movements via Wi-Fi module attached with robot. Video monitor and web interfacing is also included in this project with camera mounted on the robot.
- 81. Arduino Based Robot Controlled by TV Remote :** This project implements a robot which can be controlled for its movements using TV remote. This design uses an Arduino controller to achieve the operation.
- 82. Dynamic Behavior Analysis for a Six Axis Industrial Robot:** This analysis presents the dynamical analysis of an industrial robot for determining self-excited frequencies of robot structure and for analyzing dynamical vibration of the structures.
- 83. PLC Based Automatic Filling Machine:** The main idea of this project is to demonstrate the industrial working environment by designing an automatic bottle filling machine using PLC and sensors.
- 84. Heavy Duty Robot Racer with Wireless Control:** This project aims to build a simple heavy duty racing robot which can be controlled remotely wireless communication technology with efficient driver circuit and less power motor.

- 85. PLC Based Robotic Arm Control System:** This project illustrates the design of controls system for controlling the robotic arm using programmable logic controller (PLC) with additional motor driver circuit.
- 86. Raspberry Pi Based Humanoid Robot:** This project demonstrates the idea of designing small humanoid robots using basic components. This design uses Raspberry controller as a central processor.
- 87. Autonomous Chess-playing Robot:** The main objective of this project is to design a autonomous chess playing robot that could play a game against human opponent by implementing a chess algorithm in controller.
- 88. Eye Controlled Wheelchair System for Physically Challenged:** This project aims to aim physically challenged persons to control their wheelchairs by eyeball movements without using external commands through keyboards or push buttons by using camera and microcontroller unit.
- 89. Implementation of Autonomous Agile Aerial Robot:** This flying robot is designed for military, photography and monitoring applications. These can be either controlled remotely or flown autonomously based on pre-programmed flight plans.
- 90. Autonomous Surface Monitoring Robot:** This project implements an autonomous robot to conduct the land survey in order to examine the soil characteristics without involvement of humans. Along with this soil characteristics measurement, it includes the obstacle avoidance and path following capabilities.
- 91. Analysis of Gender and Age Group Recognition for Human-Robot Interaction:** This analysis is an application service for Human-robot interaction that gives a comparison of gender and age group recognition with audio based techniques.
- 92. Smart Host Microcontroller Based Solar Powered Tool with Robotic Arm:** The aim of this project is to design smart host microcontroller based robotic vehicle with solar tracking mechanism to increase the rover power capability and also includes additional power system performance by pack of batteries.
- 93. Autonomous Robotic Vacuum Cleaner:** This project illustrates the development of autonomous home cleaning robot that cleans the surface without human intervention using Arduino controller, sensors and motor driver circuit.
- 94. Design and Implementation of Tree Climbing Robot:** The primary goal of this project is to implement a robot which could climb a tree with simple mechanism. This also includes the gripping mechanism to stay at particular location on the tree.
- 95. Electric Guitar Playing Robot:** This objective of this project is to design a robot that can play a guitar with simple mechanical design along with automatic controller.
- 96. Design and Analysis of Parallel Robot for Surgical Applications:** This project describes the performance of a robot during surgical operations with assistance of several precise instruments and video camera.

- 97.Small-Size Soccer Playing Robot:** The aim of this project is to implement a humanoid robot that can play soccer game with capabilities like computer vision, multi-robot coordination, off-robot visualization, etc.
- 98.Artificial Neural Network Based Autonomous Mobile Robot :** This project presents an electronic design of autonomous robot which performs the precise motions based on Artificial Neural Network (ANN).
- 99.Actuator Design for Arc Welding Robot:** This design analysis helps to determine the actuator capacity by implementing six degree freedom robot for arc welding applications.
- 100. Design of a Stair climbing Robot :** This design implements a robot which can move freely on a building stairs even with spiral or steeper stairs with an intelligent mechanical design.
- 101. FPGA Based Five Axis Robot Arm Controller:** This project is aimed to perform a pick and place operation of robotic arm by correspondingly controlling speed and position with a hardware and software unit of five axis robotic arm design.
- 102. Implementation of Intelligent Robotic Fish:** The main aim of this project is to design an intelligent fish robot that can be useful for fight against water pollution by detect hazardous pollutants in the water and also to detect the leaks of underwater pipelines.