

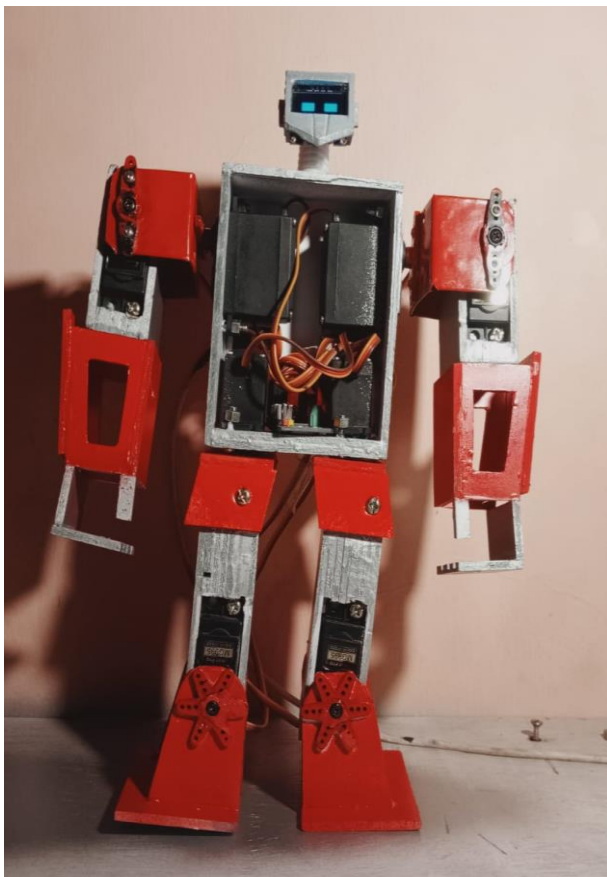
# HUMANOID ROBOT USING ESP-32

A humanoid robot is a robot resembling the human body in shape. The design may be for functional perform this such as interacting with human tools and environment. In general humanoid robots have torso, a head, two arms and two legs.

In our project we have tried to mimic the human body in a humanoid robot, which perform the following actions:

- Show facial expressions
- Speaking.
- Hand and leg movements

The humanoid is controlled by a android app which we have developed using the online platform “MIT app inventor”. To provide Wi-Fi to the humanoid for connecting with the android app, we are using an ESP 32 Wi-Fi Development Board. To design the body of the humanoid, we have used 8 servomotors, which acts as the joints that are in human body.



The Humanoid of height around 30cm



Android App

# IOT BASED HOME AUTOMATION

- With augmented growth of automation technology, home automation system are upgrading its technology within time to emphasize the revolution of industry 4.0 which currently is the trend of automation and data exchange in manufacturing technologies. It introduce cyber-physical system, the Internet of Thing (IoT), cloud computing and cognitive computing.
- In this home automation project, we control three different aspects that is: -
  - IoT based home automation
  - Motion sensing IoT surveillance Camera
  - Automatic staircase light
- The first Industrial Revolution is generally considered to be the steam machine which made the steam power exploitable opening the industry age,
- the Second Industrial Revolution is generally seen as the application of electricity to create mass production, especially in the new automotive industry;
- Third Industrial Revolution is generally linked to the extensive use of electronics and information technology to automate production. The transition of revolution is imperative as the industry 4.0 subsist to represent the fourth revolution that has appear in manufacturing.
- The fourth industrial revolution will take what was started in the third with the endorsement of computers and automation and enhance it with smart and autonomous systems fuelled by data and machine learning. In this case it is the automation of smart home revolution.



# SMART CAR PARKING

In our days, finding an available parking space can be considered as time and fuel consuming. Therefore, it may cause drivers to be frustrated; which will lead to inappropriate parking. This will lead to bad traffic around the parking space and may also lead to accident. That is why this project proposes an Intelligent Parking System that uses various sensors which will be based on Arduino Uno and also an Android Application as interface to help book or view available spaces. This project will help solve problems mentioned by allowing users to view and select available space in the parking; which will prevent users from driving around the parking for long. In this project, the Arduino Ethernet Shield W5100 Card slot will be used as the link between the Arduino and the android application. By transferring data collected from the Arduino to an online server so as to enable the android application to access those data. As a conclusion, this project will help in reducing the amount of time a driver has to spend around the parking just to find an available spot, reducing the amount of traffic around the parking and also reducing the bad parking around the parking space.



# SUN TRACKING SOLAR PANEL

We went to shift towards the use of more renewable energy & sustainable lifestyle. We have only a few solutions, one of which is utilizing Renewable Energy. One of the most prominent types of renewable energy is solar energy. In remote areas, the sun is a cheap source of electricity because instead of hydraulic generators it uses solar cells to produce electricity. The output of solar cells depends on the intensity of the sunlight and the angle of incidence. It means to get maximum efficiency; the solar panel must remain in front of the sun during the whole day. But due to the rotation of the earth, those panels can't maintain their position always in front of the sun. This problem results in a decrease in their efficiency.

Thus to get constant output, an automated system is required which should be capable of constantly rotating the solar panel according to the position of the sun. By using LDR (Light Dependent Resistor) as an input sensor to collect the data from sunlight & this data is further converted into PWM (Pulse Width Modulated) signal through the controller, this continues changing output, changes the position of the stepper motor to rotate the solar panel in front of the sun. A solar panel absorbs the energy from the Sun, converts it into electrical energy, and stores the energy in a battery. Under ONE SUN - ONE WORLD-ONE GRID by the Indian Govt., this problem can be resolved very efficiently.

