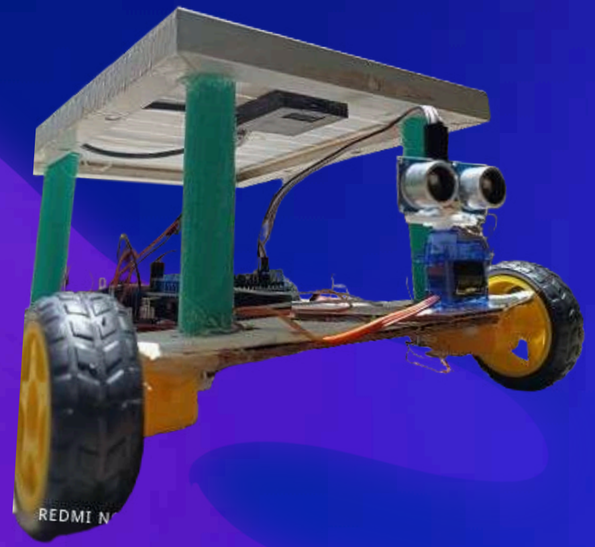
SPACE ROVER MODEL



INTRODUCTION

Space rovers, also known as planetary rovers or simply rovers, are robotic vehicles designed for exploration and scientific investigation of planetary surfaces other than Earth.

space rovers are indispensable tools for expanding our knowledge of the solar system and beyond, paving the way for future human and robotic exploration missions.

The evolution of space rovers reflects advancements in robotics, autonomous navigation, materials science, and scientific instrumentation. Each mission contributes valuable data and insights, paving the way for future exploration and potential human missions to other worlds.

USES OF ROVER

01

- Rovers analyze the composition of the soil, rocks, and atmosphere on celestial bodies to understand their geology and history. Instruments like spectrometers and drills help gather data on mineralogy and chemistry.

02

- They measure environmental conditions such as temperature, radiation, and atmospheric pressure, providing insights into the climate and potential habitability.

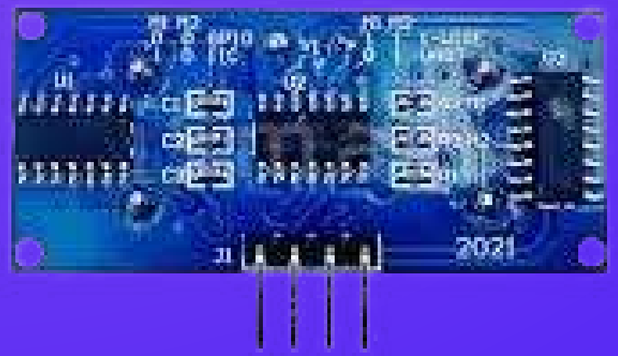
03

- Rovers are equipped with instruments to detect organic compounds and other biosignatures, helping to determine if life ever existed or could exist on other planets or moons.

ADVANCED FEATURES FOR ENHANCED EXPLORATION

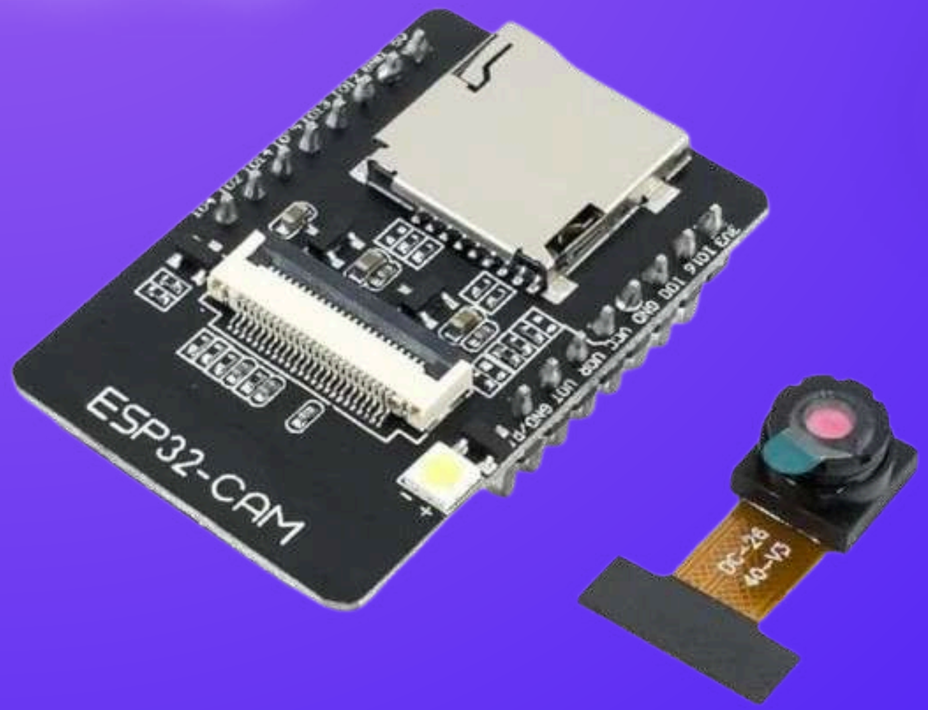
FEATURES

- Obstacle Avoidance System (OAS)
- Camera Recording System (CRS)
- Solar Charging System (SCS)



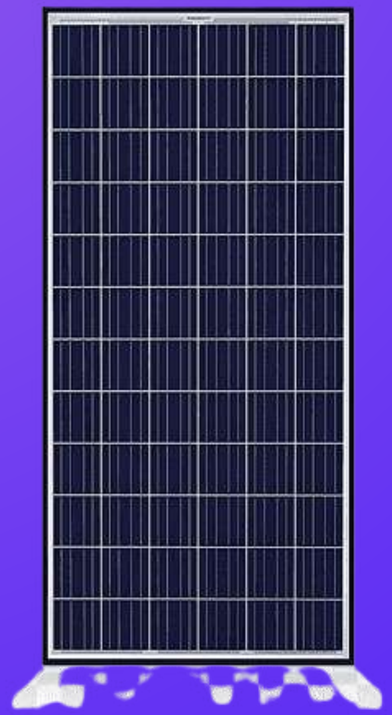
OBSTACLE AVOIDANCE SYSTEM

An optical avoidance system detects obstacles using sensors, processes the data to map the surroundings, and plans a safe path around obstacles, adjusting movements in real-time to avoid collisions.



CAMERA RECORDING SYSTEM

Recording system in a robot captures images or videos, process the visual data to identify objects and obstacles, stores the data, and uses it to make real-time decisions for navigation and interaction with the enviroment.

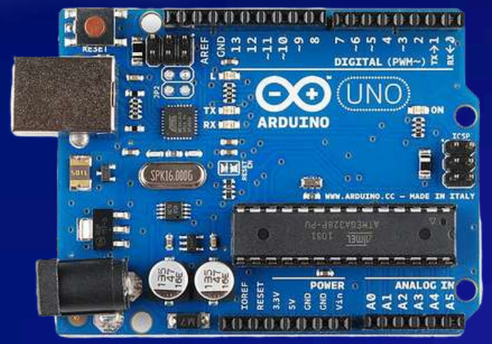


SOLAR CHARGING SYSTEM

A Solar Charging System is designed to harness solar energy and convert it into electrical power to charge batteries or power electronic devices.

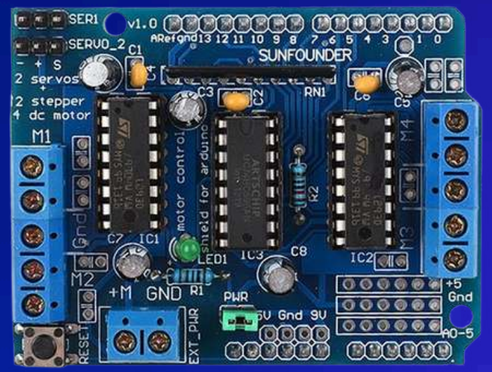
COMPONENTS USED IN ROVER

1.ARDUINO UNO



Arduino UNO is a low-cost, flexible, and easy-to-use programmable open-source microcontroller board that can be integrated into a variety of electronic projects.

2.L293D MOTOR DRIVER SHEILD



L293D shield is a driver board based on L293 IC, which can drive 4 DC motors and 2 stepper or Servo motors at the same time.

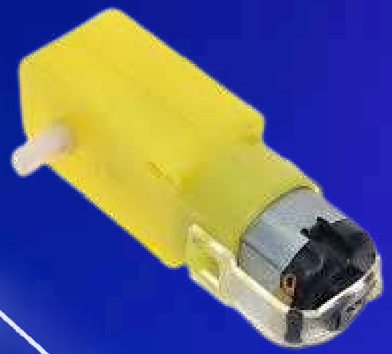
COMPONENTS USED IN ROVER

3.ULTRASONIC SENSOR

Ultrasonic transducers and ultrasonic sensors are devices that generate or sense ultrasound energy.

4.SERVO MOTOR

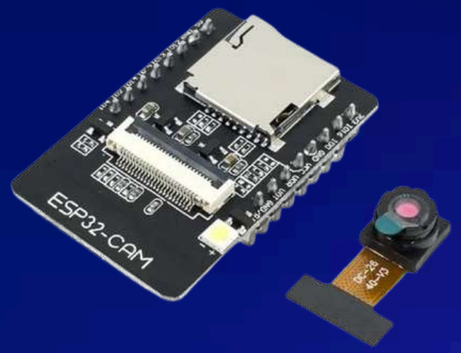
A servo motor is a rotary actuator that allows for precise control of angular position.



5.GEAR MOTOR

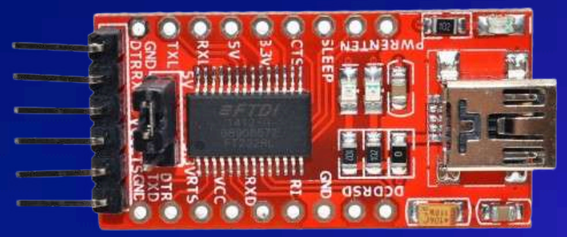
A gear motor is a motor designed with an integrated gearbox.

COMPONENTS USED IN ROVER



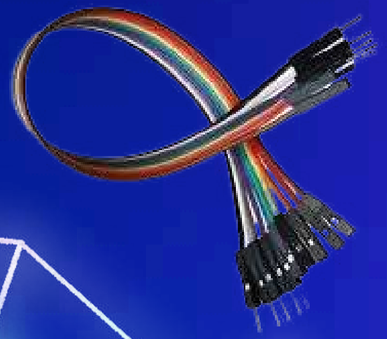
6.ESP32 CAM MODULE

ESP32-CAM is a low-cost ESP32-based development board with onboard camera, small in size. It is an ideal solution for IoT application, prototypes constructions and DIY projects.



7.FTDI-232 MODULE

The FTDI USB to TTL serial converter module is a UART (universal asynchronous receiver-transmitter) board used for TTL serial communication.



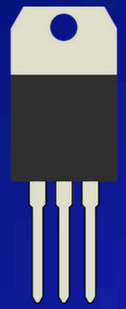
8.JUMPER WIRE

Jumper wires are simply wires that have connector pins at each end, allowing them to be used to connect two points to each other without soldering.

COMPONENTS USED IN ROVER

9.SOLAR PANEL

When this material is exposed to photons of sunlight (very small packets of energy) it releases electrons and produces an electric charge.



10.7805 IC

the 7805 is a positive voltage regulator that ensures a stable +5V output, making it a popular choice for powering various electronic components and circuits.

CIRCUIT DIAGRAM

Solar Panel

Servo Motor

Gear Motor

Gear Motor

L293D Motor Driver

Gear Motor

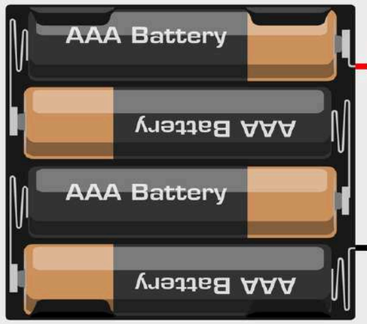
Gear Motor

Switch

Connect L293D Motor Driver To Arduino Uno

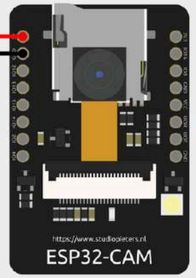
Arduino Uno

Ultrasonic Sensor



Li-ion Battery

7805 IC



ESP32 Cam Module

Use FTDI To Code In ESP32 Cam Module

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Thank You