GESTURE CONTROLLED ROBOT USING ESPNOW

Goal:The goal is to build a self balancing robot with can be controlled through android app

## Required Materials:

Nema 17 Stepper Motor with its screws
ESP32 (30pins)
A4988 Stepper Motor Driver
MPU6050
AMS1117 - 5v Voltage Regulator
5v Buzzer
220uf Capacitor-16V
100uf Capacitor-16V
Male Connector for li-po battery
on/off Switch
1000mah 3s lipo battery
5mm Hex Coupling (for stepper Motor to wheels)
Servo Motor MG90S
LED 3mm
100mm Wheels
Resistor 1K Ohm
Micro USB Cable
male to female Pillar M3 Standoff Spacer
Female Header pins
Male Header pins
M3 set screw 10mm
M3 nuts
3D Printed Parts, PCB file
zip ties
Lipo Battery Strap Belt

Software Requirements: Arduino IDE.

Wiring Diagram:
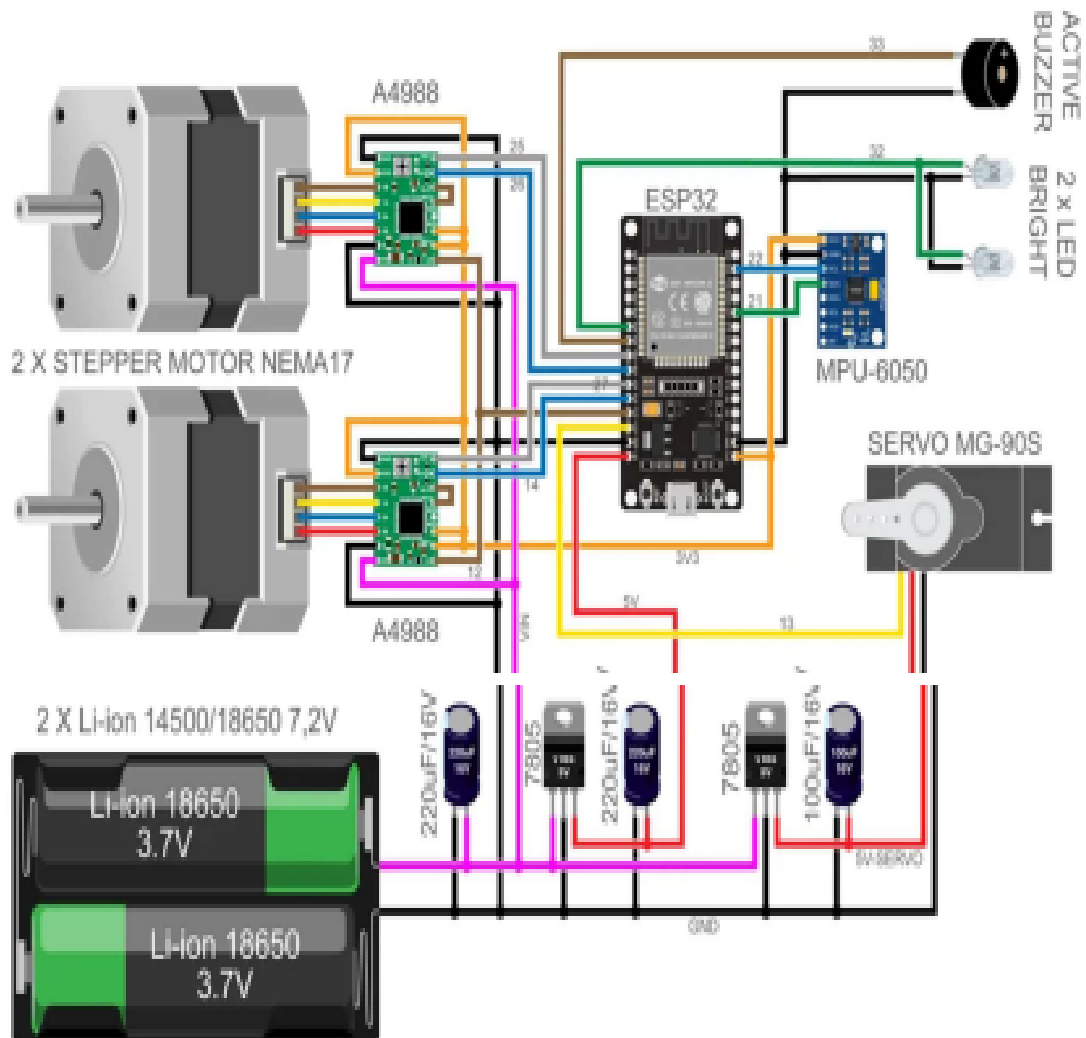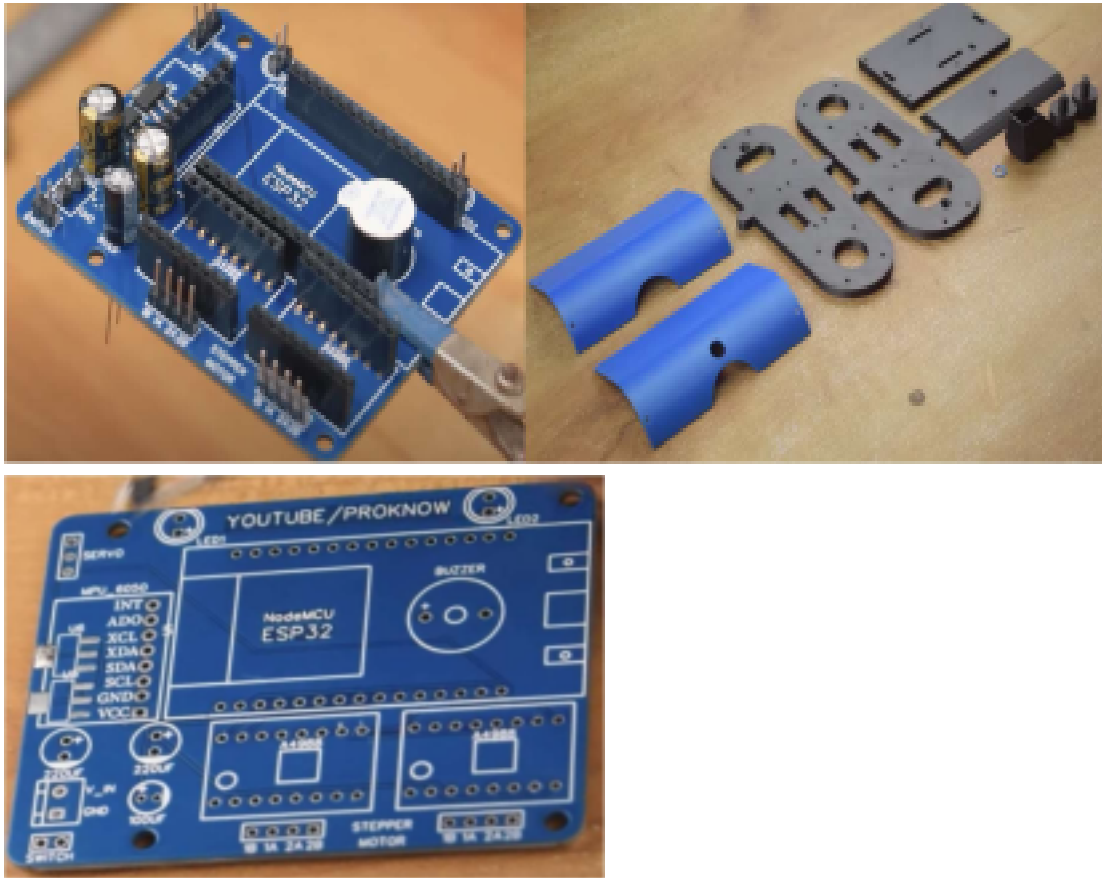
Procedure:

- 🎬 Assemble all the 3D-printed parts.
- 🎬 Solder the components onto the PCB.
- 🎬 Position all components appropriately.
- 🎬 Connect the ESP32 to the computer.
- 🎬 Install the Arduino IDE.
- 🎬 Install the following libraries: Wire, WiFi, ArduinoOTA, Arduino, AsyncTCP, and ESPAsyncWebServer.
- 🎬 The code has been updated to accommodate new API changes; therefore, upload the code directly.

Troubleshooting Points:

1. .Test the stepper motors using the test code provided in the files.
2. If you prefer to use the old API, the previous version of the code is available within the program itself.

3. Reference links:

   o Migration Guide from 2.x to 3.0

   o LEDC API Reference

4. Ensure that the V_ref is consistent across the A4988 Stepper Motor

Driver.

5. The application may contain bugs; please relaunch the application if

necessary.

Output :

The robot will maintain its balance autonomously, and we will be able to control the robot in all directions using the application.

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