TWO WHEELED SELF BALANCING ROBOT

GUJARAT ROBOFEST 3.0

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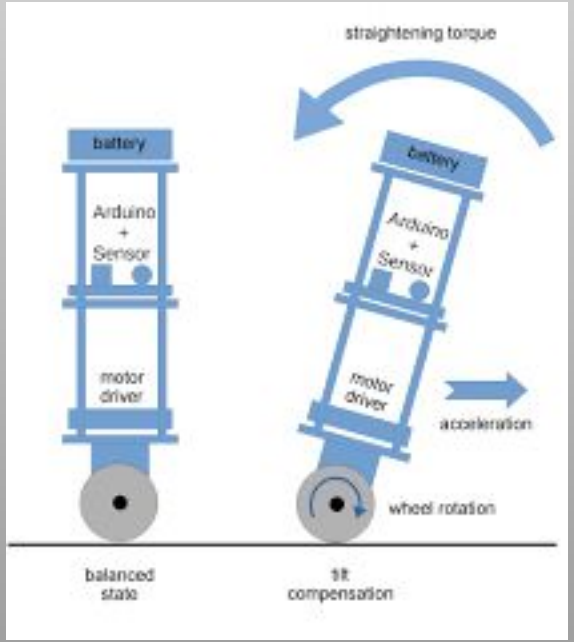
PoC OBJECTIVES

- To design a 2 wheeled robot that maintains the balance on its own.
- A gyroscope sensor should be used for feedback.

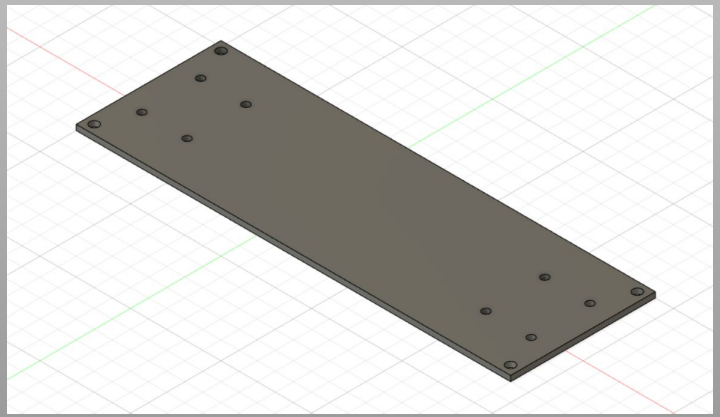


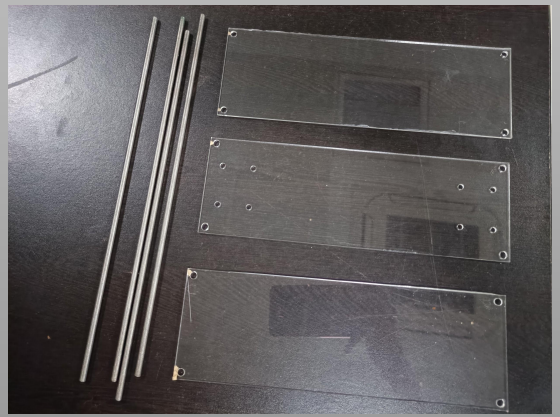
APPROACH

- Selected Nema 17 stepper motors for precise control of wheels.
- Implemented PID controller.
- Feedback from Gyroscope (MPU 6050)

HARDWARE

- Rectangular sheets were laser cut after designing in Fusion 360.
- 5 mm threaded rods are used for the assembly.





WHEELS

- We tried and tested three different set of wheels for better balance.

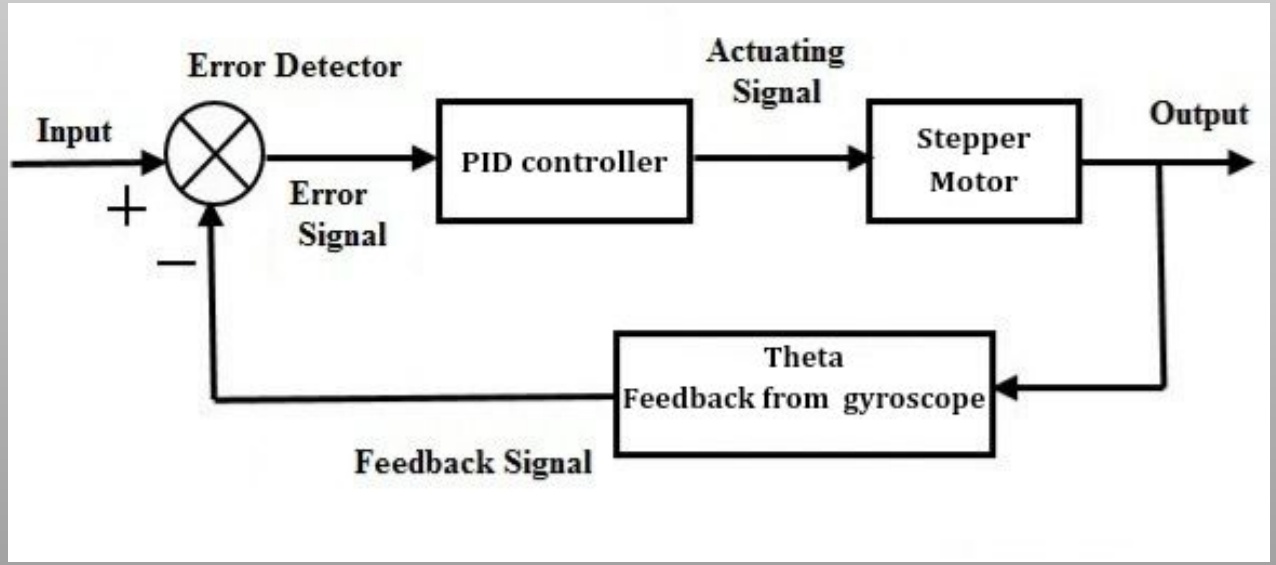
ELECTRONICS COMPONENTS

Nema 17 stepper motor

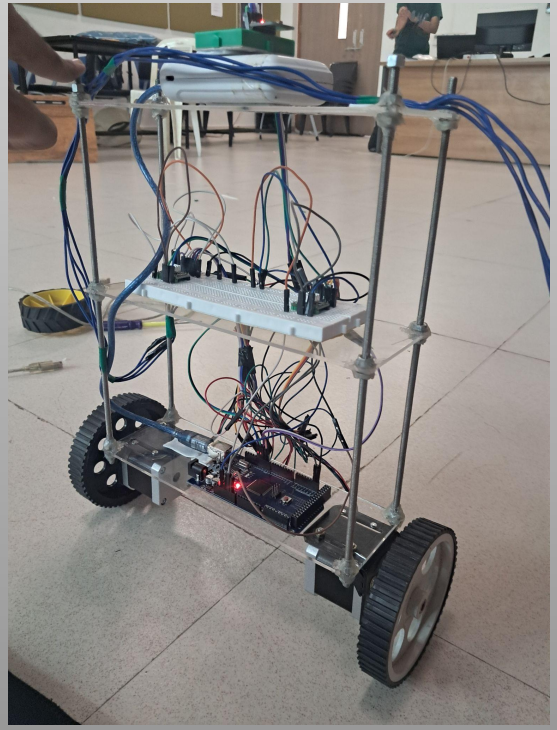
Arduino Mega

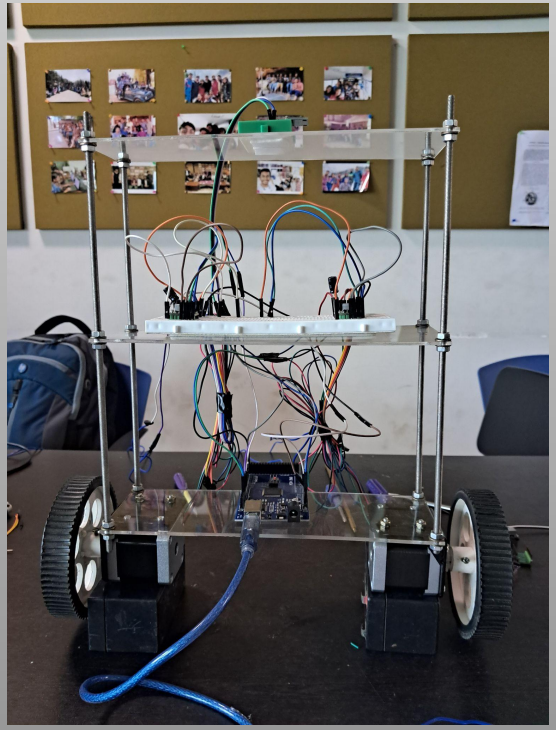
MPU 6050

CONTROLLER DESIGN

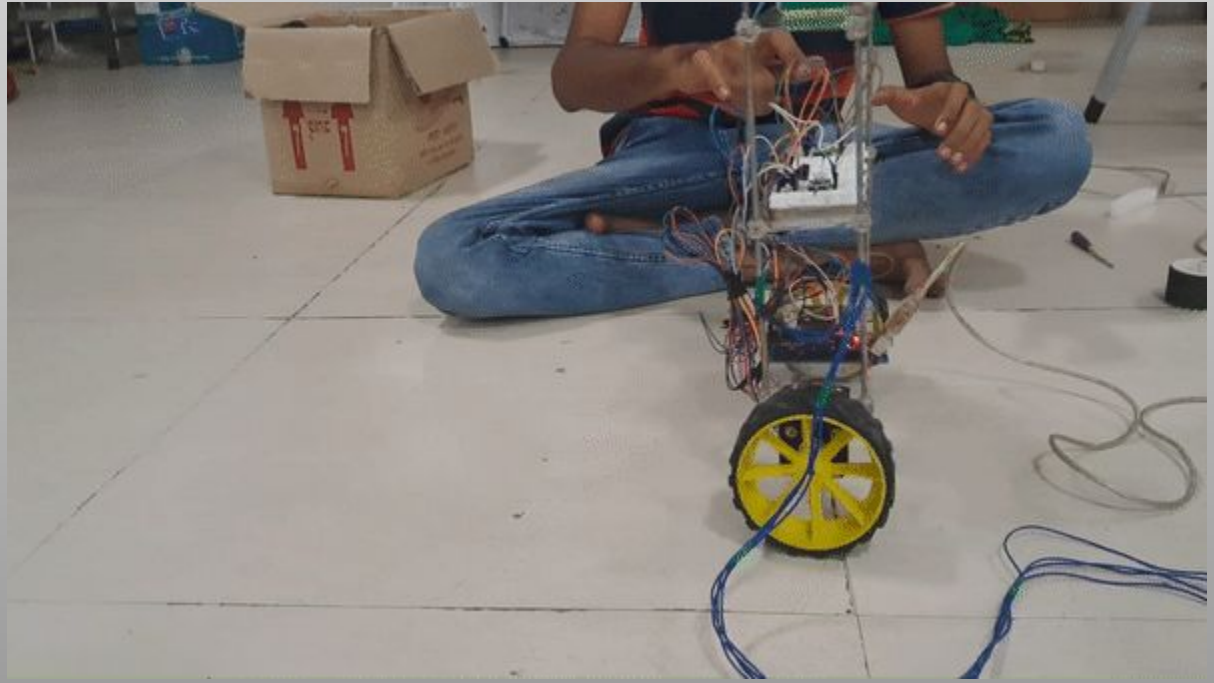


FINAL ASSEMBLY



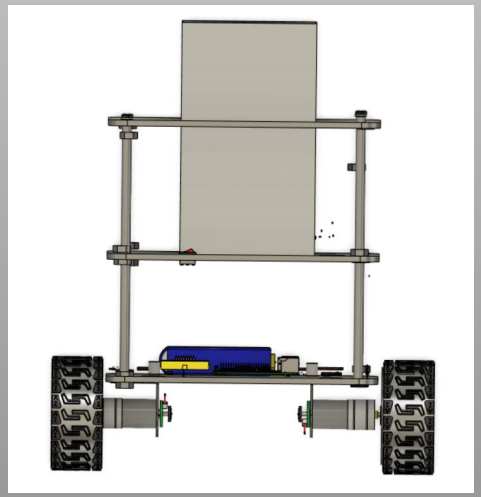


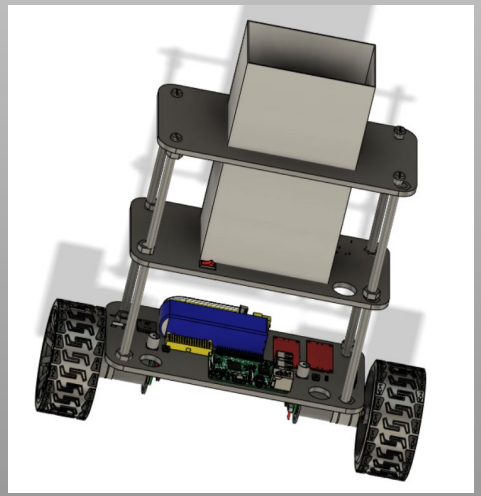
WORKING



PLAN OF ACTION

- Designed a container for liquid payload .
- Camera for detecting line to be followed to reach the destination





THANK YOU

Implementation

- Selected Nema 17 stepper motors for precise control of wheels.
- Implemented PID controller by obtaining the error angular deflection using feedback from MPU 6050
- Feedback from Gyroscope (MPU 6050)
- Assembled hardware as per requirements and tested the controller.