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(57) Abstract :

In the last decade, the open-source community has expanded to make it possible for people to build complex products at home. This construction of self-balancing robot using Arduino on 2 wheels. The system in itself requires active control in order to be stable. Using Arduino Nano microcontroller board, two DC motor with wheels, PID controller controls it through the program written in Arduino IDE. IMU sensor, battery, breadboard and various nuts, bolts and tools, make a robot which can balance itself on two wheels. Our job will be to balance the platform using sensors and to maintain it horizontally. In this project a self-balancing two wheeled robot is proposed. The structural, mechanical, and electronic components of the bot will be assembled in a manner that produces an inherently unstable platform that is highly susceptible to tipping in one axis. The robot wheels are capable of moving independently in two directions. Servo motors are used to provide the rotation. The gyroscopic sensor MPU6050 is used in the feedback loop and it gives both acceleration and rotation feedback along the entire three axis and this information is used by the Arduino to know the current orientation of the robot. If the robot bends in the forward direction, then the Arduino will send signal to the motors to run in reverse direction to keep the robot horizontal, similarly if the robot bends in the backward direction, Arduino makes the motors run in the forward direction and this process keeps on running and the balance is constantly maintained. A PID algorithm is used to do the necessary calculations.

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