

MEMS BASED DUAL AXIS SELF-BALANCING PLATFORM

AIM:

Design and Development of MEMS based Dual axis self-balancing platform.

PURPOSE:

Accelerometer can detect inclination of two axis like X and Y. We can use it in many applications like satellites, automobiles, Robotics, Automations....etc. Here we want to design a new system that can balancing platform in two axis. Here proposed design title is MEMS based dual axis self-balancing platform using Arduino.

DESCRIPTION:

Arduino uno is heart of this project and it can drive entire system with the help of firmware. Two Dc motors controlled by L293d driver which are interfaced to Arduino digital pins. MEMS sensor (Accelerometer – ADXL335/35/MPU6050) interfaced to Arduino I2C port.

WORKING:

Balancing platform is a mechanical design which can move in X and Y axis. The main platform is in X axis and rotates with the help of DC gear motor. This is called X-axis platform. This X-axis platform attached to Y-axis motor and rotated with the help of another DC gear motor. MEMS sensor placed below the main platform which can detect both axis inclination. With the help of two motors, platform is in balance place by taking feedback of MEMS sensor. If we place any object on main platform, it will be in stable position without rolling down even total platform tilted.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontroller	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16X2 LCD
MEMS – Accelerometer	:	ADXL345/MPU6050
Motors	:	10 rpm and 3.5rpm
Motor Driver	:	L293D
Power Source	:	12v 1 amp Adaptor

SOFTWARE:

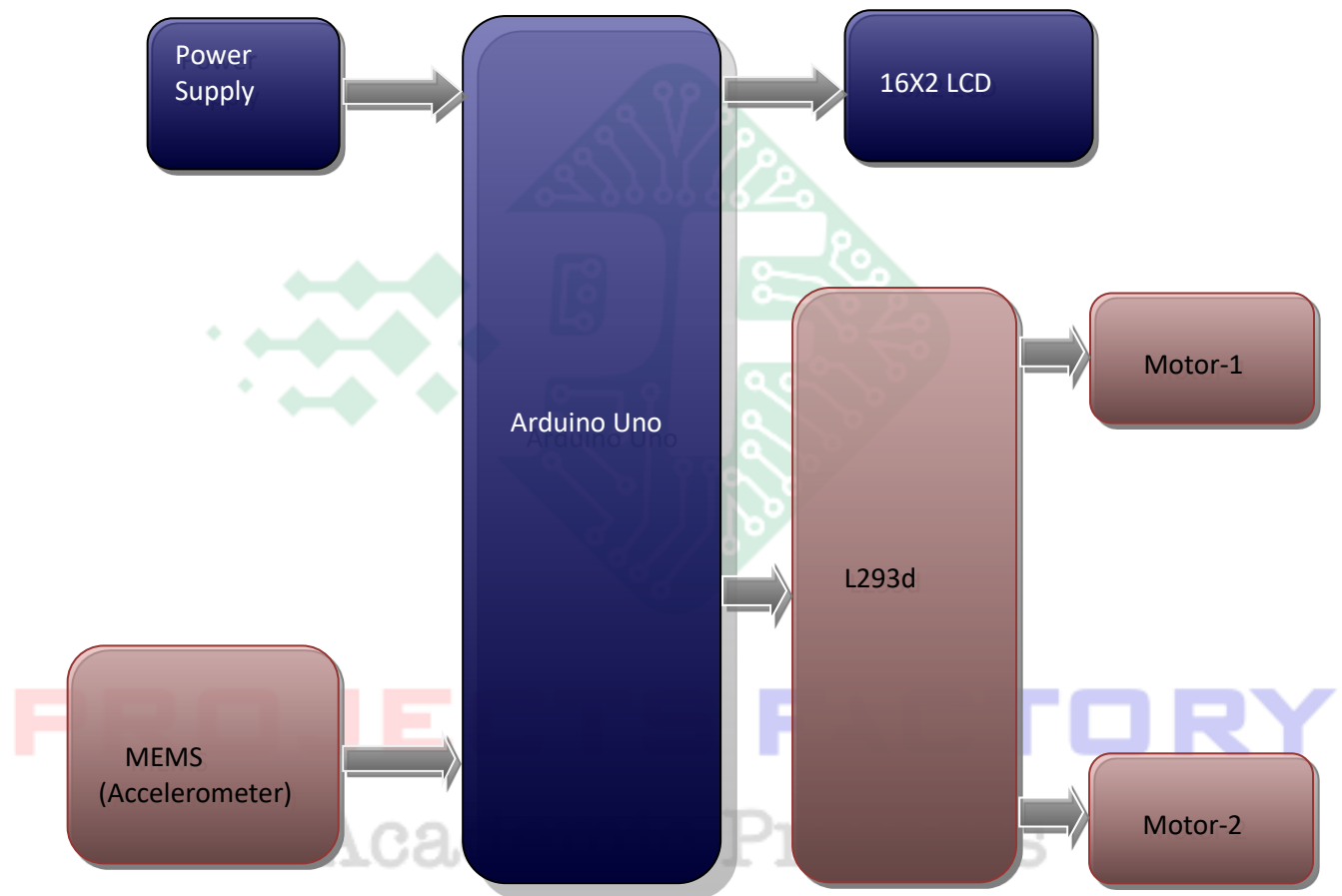
Arduino IDE
Proteus based circuit diagram

APPLICATIONS:

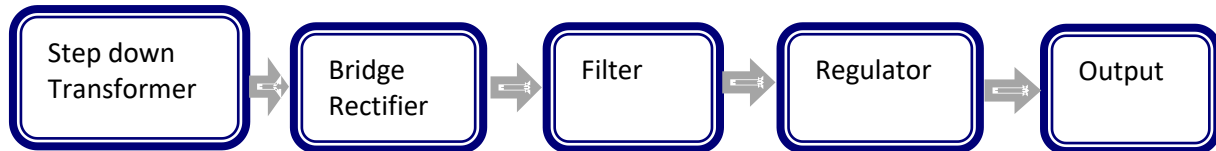
- Balancing platform Applications
- Industrial Applications

PROJECTS FACTORY
Academic Projects

BLOCK DIAGRAM:



POWER SUPPLY BLOCKDIAGRAM:



INTERFACES COVERD:

- We have covered Axis control system with dual motors combination
- MEMS sensor interface

PROJECTS FACTORY
Academic Projects