MEMS BASED SELF-BALANCING PLATFORM WITH ROBOT

AIM:

Design and Development of MEMS based self-balancing platform with robot.

PURPOSE:

Now a days robotics place major role in every sector. Especially for industrial applications robots brings lot of changes. They will reduce time and reduce manpower. Here we want to design self-balancing platform on robot to carry things even in uneven surfaces.

DESCRIPTION:

This project includes Bluetooth module (HC-05), which is connected to Arduino UART port. Dc motors controlled by L293d driver which is interfaced to Arduino digital pins. MEMS sensor interfaced to Arduino I2C port.

WORKING:

Here robot can be controlled from Android Application. MEMS sensor placed on balancing platform to detect X-axis, Y-axis moments. Two DC gear motors controlled balancing platform in X-axis and Y-axis. This works like gyro operations. User can enable and disable gyro operation from mobile Application. While Robot moving in uneven surface platform will be adjusted according to uneven surface. Here Arduino plays major role to perform all these tasks simultaneously. User can unlock gyro from Application. Balancing platform will be static while gyro is in disable mode. All this information displayed in Android Application as well as on 16X2 LCD display.

TECHNICAL SPECIFICATIONS:

HARDWARE:

Microcontroller	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16X2 LCD
Bluetooth Module	:	HC-05
Motors	:	10 rpm and 3.5rpm
Motor Driver	:	L293D
Power Source	:	12v 1 amp Battery

SOFTWARE:

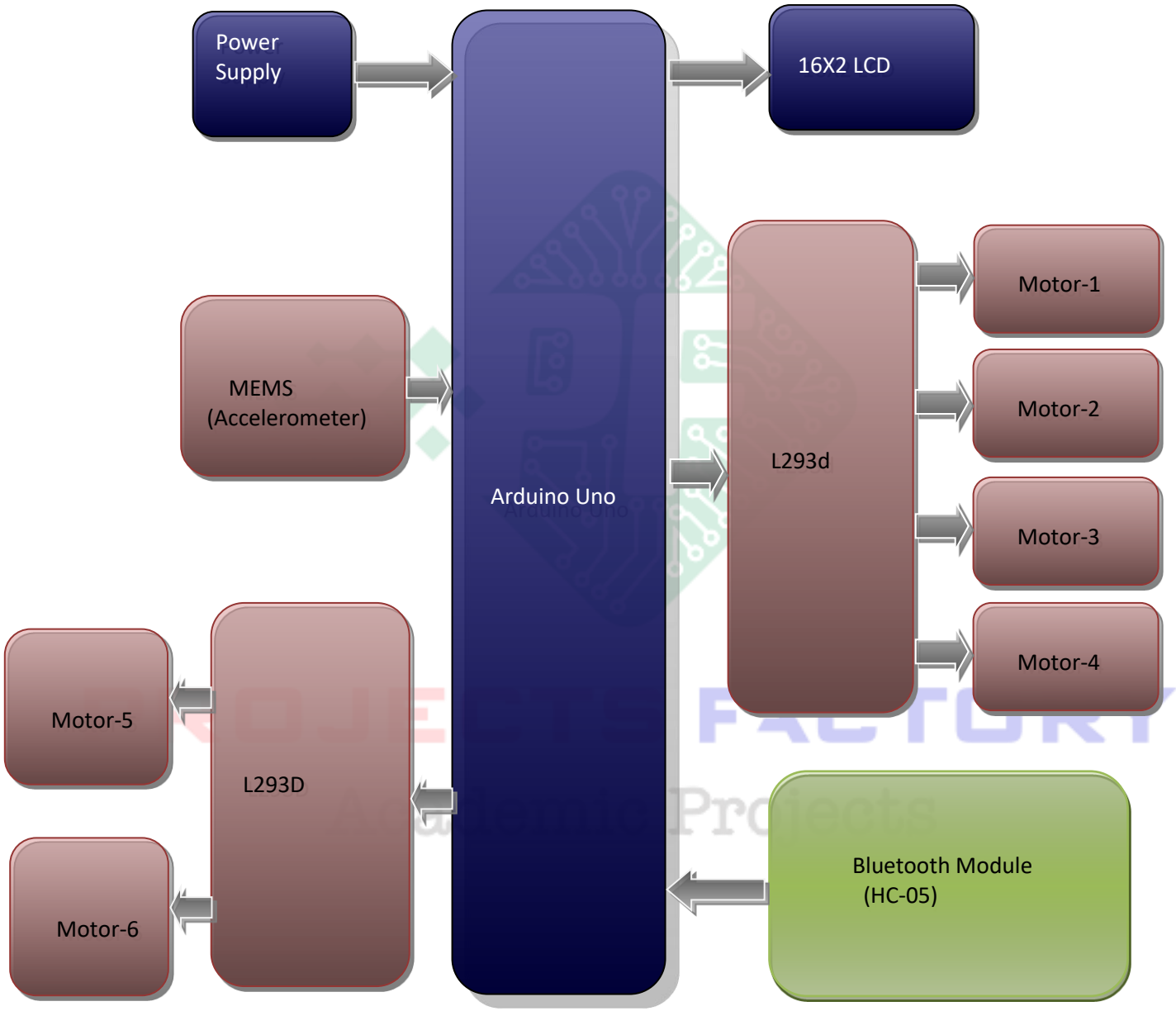
Arduino IDE

Proteus based circuit diagram

APPLICATIONS:

- Robotic Applications

BLOCK DIAGRAM:



POWER SUPPLY BLOCKDIAGRAM:

INTERFACES COVERD:

- We have covered Bluetooth (HC-05) interfacing
- MEMS sensor interface