BIPED ROBOT

The word biped means two legs. Bipedalism is a form of terrestrial locomotion where an organism moves by means of its two rear limbs, or legs. An animal or machine that usually moves in a bipedal manner is known as a biped /ˈbɪpɛd/, meaning "two feet" (from the Latin bi for "two" and ped for "foot"). Types of bipedal movement include walking, running, or hopping, on two appendages (typically legs).

The participant will build a biped robot which can walk on its own, climb steps and even dance to your music. The microcontroller used in this workshop is ATmega8 and the development environment used is WinAVR.

This workshop will be conducted for 2 days (16 Hrs), with each day divided into 2 sessions. The course content which will be followed for the workshop is as mentioned below

- **Introduction**
  - Introduction to Robotics
  - Application of Robotics
  - Introduction to legged robots

- **Types of legged robots and their mechanical Model**
  - Biped
  - Quadruped
  - Hexapod
  - Leg-Wheel
  - Passive Dynamic Walker

- **Basic parts of a Robot**
  - Mechanical System
    - Design Criteria
    - Statics and dynamics of a legged robot
    - Inverse Kinematics
    - Gait Motion
  - Power Supply System
  - Actuators
    - Servo motor
      - Digital and Analog Servo motors
    - DC motor
  - Control System
    - Microcontrollers and microprocessors
    - Installing and using WinAVR
  - Sensors
    - Feed back sensors
Hands On Session
- Construction of the biped robot
- Programming the servo motors
- Writing the gait motion for the robot
- Autonomous Humanoid

Demo of MSRDS (Microsoft Robotic Development Studio)

Kit Contents:
- Microcontroller Development board with the following features
  - 8 bit Atmega8 Microcontroller
  - On-board regulated power supply
  - On-board 4 test led
  - On-board tact switches
  - Exposed I/O pins of all ports
  - External Reset Switch
  - Dual Power supply (USB/battery)
  - On-Board Programmer
  - USB programmable
- 4 Servo Motors
- BIPED SETUP
- Battery
- Set of connecting Wires
- USB Cable
- Screw Driver
- A set of Screws, nuts and bolts