

ROBOTICS

Duration: 15days – 3hr/day

Basics of Electronics

- Introduction of Electronics
- Basic Components
- Circuit Calculations
- Circuit Building
- Introduction of Robotics

Locomotion

- Introduction of Locomotion
- Types of locomotion
- Legged Mobile Robots
- One leg
- Two legs
- Four legs
- Six legs

Wheeled Mobile Robots

- Wheel design
- Wheel geometry

Motion Interpolation

- Mechanical Components
- Electronic System Components

Sensors

- Internal sensors
- External sensors

Motor Selection in Robotics

- Servomotors
- Stepper Motors
- Permanent-Magnet DC Servomotors
- Stepper Motors
- Permanent-Magnet (PM) Stepper Motors
- Variable Reluctance Stepper Motors
- Hybrid Stepper Motors
- Stepper-Motor Based Linear Actuators
- Disk-Type PM DC Motors
- Shell-Type PM DC Motors
- Brushless PM DC Motors
- Position Sensing in Brushless Motors
- Linear Servomotors

Features of motors

- Brushless Motor Advantages
- Brushless DC Motor Disadvantages
- Advantages of Linear vs. Rotary Servomotors

Servo system Feedback Sensors

- Rotary Encoders
- Incremental Encoders
- Absolute Encoders
- Linear Encoders
- Magnetic Encoders

Motion Control Classification

- Open-Loop Motion Control Systems
- Closed-Loop System
- Motor Drivers
- Feedback Sensors

Microprocessor and Microcontroller

- Difference between Microprocessor and Microcontroller
- Basics of coding
- Interfacing of peripheral device

Wireless Communication

- Infra red(IR)
- Radio frequency(RF)
- Bluetooth
- Optical fiber
- WIFI

Projects