



Adani Institute of Infrastructure

Management • Engineering

Course Content of Autonomous Robotics Workshop

SESSION 1: Introduction to Robotics

- ❖ *Introduction to Robotics*
- ❖ *Robotics and its application*
- ❖ *Definition, of the Robots*
- ❖ *Future of Robotics*
- ❖ *Basic Parts for build a robot*
- ❖ *Mechanical Structure*
- ❖ *Power Supply*
- ❖ *Motors*
- ❖ *DC Motors: Construction & Characteristics*

SESSION 2: Basic Electronics

- ❖ *Basic Electronics Component*
- ❖ *Fundamental of Electronics Component*
- ❖ *Resistor*
- ❖ *Transistor*
- ❖ *Capacitor*
- ❖ *Diode*

SESSION 3: Motor Driver Using H-Bridge

- ❖ *DC Motor Drivers*
- ❖ *H-Bridge Motor Driver*
- ❖ *Working of H-bridge & Concept*
- ❖ *L293D Motor driver IC*
- ❖ *Internal Circuit of IC*
- ❖ *Hands on Session for H-Bridge interfacing*

SESSION 4: Sensors

- ❖ *Introduction to Sensor*
- ❖ *Types Of Sensors*
- ❖ *Working principle of IR Sensor*
- ❖ *Op-amp*
- ❖ *Circuit of IR Sensor*



SESSION 5: Introduction to microcontroller

- ❖ *What is microcontroller?*
- ❖ *Difference Between microcontroller & microprocessor?*
- ❖ *Introduction to ATmega 8 /16 microcontroller*
- ❖ *Architecture of the AVR Microcontroller*
- ❖ *RISC v/s CISC*
- ❖ *How can we use an own microcontroller in our own circuit?*
- ❖ *Pin description of the microcontroller*
- ❖ *How to use I/O of the microcontroller*

SESSION 6: Introduction to Embedded C Programming

- ❖ *Embedded C Programming for the Microcontroller*
- ❖ *Introduction to AVR Studio and WinAVR*
- ❖ *Introduction to C, Flow Control and function*
- ❖ *Program structure and debugging*
- ❖ *How to program a microcontroller?*

SESSION 7: Embedded Projects implementation & testing

- ❖ *Writing and burning Black Line follower Program*
- ❖ *Testing and debugging Black Line follower Program*
- ❖ *Writing and burning Obstacle Avoider Program*
- ❖ *Testing and debugging Obstacle Avoider Program*
- ❖ *Writing and burning Edge Avoider Program*
- ❖ *Testing and debugging Edge Avoider Program*