

## **AI Robotics**

<b>Technology</b>	<b>Duration</b>	<b>Project Base</b>
AI Robotics	2 days	Software & Hardware

### **Introduction**

- Introduction to Robotics.
- Basic Parts of Robotics & Future of Robotics
- Various Robotics technologies
- Intelligent Robot
- Artificial Intelligent Robot
- Application of Robotics

### **Basic electronic and Sensors**

- Basic Electronics Component
- Conceptual Knowledge of Basic electronic components
- Introduction on Sensors
- Sensors used in Robotics.
- Different Types of Sensors (IR, Temperature, Sound, Touch, Light, ultrasonic etc.)

### **Motor Driver Using H-Bridge**

- Introduction to Motors.
- L293D Motor driver IC
- Internal Circuit of IC
- Hands on Session for H-Bridge interfacing

### **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
- Pin description of the microcontroller
- How to use I/O of the microcontroller

## **Introduction To C Programming**

- Embedded C Programming for the Microcontroller
- Introduction to AVR Studio and WinAVR
- Program structure and debugging
- PORT Programming

## **Introduction to Serial Communication**

- Introduction of Serial Communication
- USART
- Register of USART
- Practical Application of Serial Communication
- Serial Communication between System & Microcontroller
- Interfacing of Bluetooth Module

## **Sensor Introduction**

- Introduction to sensors
- Different types of sensors
- Ultrasonic sensor
- Infrared sensor
- Passive infrared sensor
- LDR Sensor

## **Project:**

- LED Blinking
- Distance Calculation by ultrasonic sensor
- Automatic Parking system

## **Introduction to Python**

- Introduction to Python
- Different type of Python IDE
- Why Python
- Installation of Python
- Application of Python
- Different types of python Libraries
- Programming in python

- keywords

- functions
- logical and conditional operators
- list , tuples , set etc.
- Problem statements
- different types of error

## **Software Installation and package installation**

### **Introduction to Artificial Intelligence**

- Why do we need to study AI?
- Applications of AI
- Classification of AI
- AI Concepts, Terminology, and Application Areas
- Difference AI and ML
- Working and concept of AI

### **Environment(IDE) and Software**

- Introduction to IDE
- Use of IDE
- Introduction to python IDE
- Introduction to Anaconda
- Introduction to Jupiter Notebook
- Introduction to Octave

### **Opencv**

- Introduction of Opencv
- Why Opencv
- Use and application
- Installation and use
- Workflow

### **Data Mining: Clustering Techniques**

- Introduction to Data Mining
- Cluster Analysis (Hierarchical Clustering, K- Means Clustering)

## **NLTK**

- What is chat bot assistance?
- How to create assistance by programming
- About NLTK library

## **Project:**

- Face and eye Detection Model
- Object Detection Model
- Chat Bot

## **Final Project: Human Detection with Robotics**