



Robotics WITH AI & ML Curriculum

Introduction to Robotics & Mechatronics

- 1. understand robotics & mechatronics
- 2. understating how mechanical parts are controlled by electronics through embedded system.
- 3. using micro controller to control mechanic all components
- 4 industries' where robotics and mechatronics is used.

Introduction to Open Source platform

- An Overview of Open Hardware
- Arduino Board Description

- Difference between Microcontroller and Microprocessor
- Microcontroller architecture and Interfacing
- Introduction to Microcontrollers & the Arduino Platform
- How can we use microcontroller in our circuits

Introduction to Programming Language

- Programming Languages- Assembly Vs Embedded 'C'
- Microcontroller Programming using Embedded 'C'

Introduction to software tool chain

- Software Installation
- Getting started with the Arduino IDE to start writing your first program
- Writing your First 'Embedded C' Program

Interfacing of I/O devices LEDs

- Types of LEDs.
- How LEDs works?
- How LEDs will glow in sequence?
- Interfacing of LED with Arduino

Buzzer

- Types of Buzzer
- Uses of Buzzer in Real Time
- Interfacing of Buzzer with Arduino

Sensor

- What is Sensor
- Different Types of Sensor
- Interfacing of Different sensor.

Mechanical Assembling of Robot

- Part names & specification
- How to connect different parts
- Interfacing of parts with each other

Actuators

- Introduction of actuators
- Actuators & Motors
- Types of motors

Motor Driving Systems

- Introduction of actuators
- Actuators & Motors
- Types of motors

Servo Motor

- Basic Fundamentals of Servo Motor
- Different Types of servos
- Uses of servomotor

Mechanical Arrangement to ease the fire detection

- Types of mechanical arrangement
- Uses of servo motor in mechanical arrangement.
- Angle specification with servos

Mechanical Arrangement for water dispensing

(SAMPLE PROJECT CONCEPT)

- Mechanical placement of water pump and water pipe.
- Different ways to dispense water.
- Angle specification with servos

Serial Communication

- Difference between Parallel and Serial Communication
- USART / UART Protocol
- Bluetooth communication
- Difference between different Types of Bluetooth Modules

Introduction to AI

- In this module, you'll learn about common uses of artificial intelligence (AI), and the different types of workload associated with AI. You'll then explore considerations and principles for responsible AI development.

Artificial Intelligence using cloud

- Responsible AI

- After completing this module, you will be able to:
Describe Artificial Intelligence workloads and considerations

Introduction to Machine Learning

- Machine learning is the foundation for modern AI solutions. In this module, you'll learn about some fundamental machine learning concepts, and how to use the Azure Machine Learning service to create and publish machine learning models.
- Azure Machine Learning

Computer Vision

- Computer vision is a area of AI that deals with understanding the world visually, through images, video files, and cameras. In this module you'll explore multiple computer vision techniques and services.

Computer Vision Concepts
Computer Vision in Azure

KNN Introduction

- kNN Concepts
kNN and Iris Dataset Demo
Distance Metric

17. Project

18. One module on Cyber and mobile security



Program Details

Training Duration 40-50hrs

Project :- Included in the program

Fees Under Scholarship Rs :-
2880 + GST



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