

Arduino Live Class

Instructors:

Kishan Menaria :

Having 2+ years of DataScience and AI in Hardware Edge Devices, proficient in data modelling, data preprocessing as well as scripting language Python Programming Language have experience with Robot Operating System (ROS) Have Experience in AI in Edge Devices. Machine Learning and Deep Learning (Computer Vision) are two of my areas of expertise. I love the R&D; work and making Businesses models and strategies or Developing technical solutions for business problems.

Curriculum:

Introduction to the course

- Course Overview and Roadmap Ahead
- Hardware parts and tools requirement

Overview of Ardiuno Family

- Arduino UNO
- Arduino Mega (R3)
- Arduino Mega
- Arduino Leonardo
- Arduino Due
- Arduino Zero
- Arduino 101
- Arduino Pro Mini

Installation and Setup IDEs

- Arduino IDE installation
- Arduino IDE setup
- Understanding the Preferences pane and Menu items
- Connect your Arduino board and Find it on the Arduino IDE
- Using simulator: Tinkercad

Detail Explanation of Arduino Boards

- Atmega328P
- USB
- Shields
- Power
- Clock
- Digital output pins
- Digital input pins
- Analogue output pins
- Analogue input pins

Prototyping in Arduino

- Understand and configure breadboard Using the breadboard.
- Powering your Arduino with power supplies
- Using the multimeter to measure voltage
- Using the multimeter to measure current
- The multimeter - Resistance and continuity

- Introduction to soldering - the soldering iron
- Soldering - preparation and using holders
- Soldering - using wire cutters and fume extractor
- Soldering - Simple maintenance tips for your solder iron
- A demonstration of soldering a header onto a breakout board
- Introduction to protoboards
- Reading a Schematic
- Applying Ohm's Law

Practice with Arduino pins

- Digital pins as output pins
- Digital pins as input pins
- Analogue pin
- Serial communication(send data to receive data)
- Time functionality management

Arduino Programming

- Syntax, Program Flow, and Comments
- Datatypes
- Variables
- Variable scope
- Arithmetic Operators
- Predefine functions
- Custom functions
- Creating custom functions and the return keyword

- Constants
- Introduction to control structures:
- The "if" statement
- The "while" statement
- The "For" statement
- The "Switch" statement
- while loop
- for loop

Arduinio advance programming

- Arrays
- Strings

Connect LCD display with arduino

- Introduction to LCD
- Add the LCD Screen to Your Circuit
- LCD wiring in 4-bit parallel mode
- LCD demonstration sketch
- Display sensor data in the LCD
- Connect LCD using the I2C adaptor
- Using the RGB LCD and buttons shield

Serial Communication in Arduinio

- Send data
- Receive data

Sensors with Arduino(s)

- Temperature sensor
- Humidity sensor
- Pressure sensor
- Infrared motion sensor
- Distance sensor(Ultrasonic sensor)
- Sounds sensor
- Detecting acceleration

Wireless connectivity

- Bluetooth
- Wi-Fi
- Cloud
- Using GPS with Arduino

Robotics with Arduinio

- Introduction: Robots
- Transistors as Switches
- DC Motor
- H-Bridge
- Servo Motor

IOT with Arduinio

- Introduction: The Internet

- CART
- Connecting to WiFi
- GET a Web Page
- JSON Primer
- Introduction: What is IoT?
- Posting to ThingSpeak
- Intro to IFTTT
- Making Requests to IFTTT
- Passing Arguments to IFTTT
- IFTTT to ThingSpeak

Major project

- Bomb decoder game
- Serial LCD screen
- Ultrasonic people counter
- OLED breath analyser
- Ultrasonic soker
- Fingerprint scanner
- Ultrasonic robot
- Internet controlled LED
- Voice-controlled LED
- GPS speedometer
- Obstacle detection

Project categories

- Light Project
- Sensor project
- Sounds project
- Power project
- Security
- Smart machine
- USB project with Leonardo
- Miscellaneous project

Project Idea

- Modem-based security system for restricted area
- Campus fire monitoring systems
- Light intensity control system
- Dc motor control system
- Temperature monitoring control system
- Home autonomous system
- Fingerprint-based autonomous system
- Wireless irrigation system for agriculture field