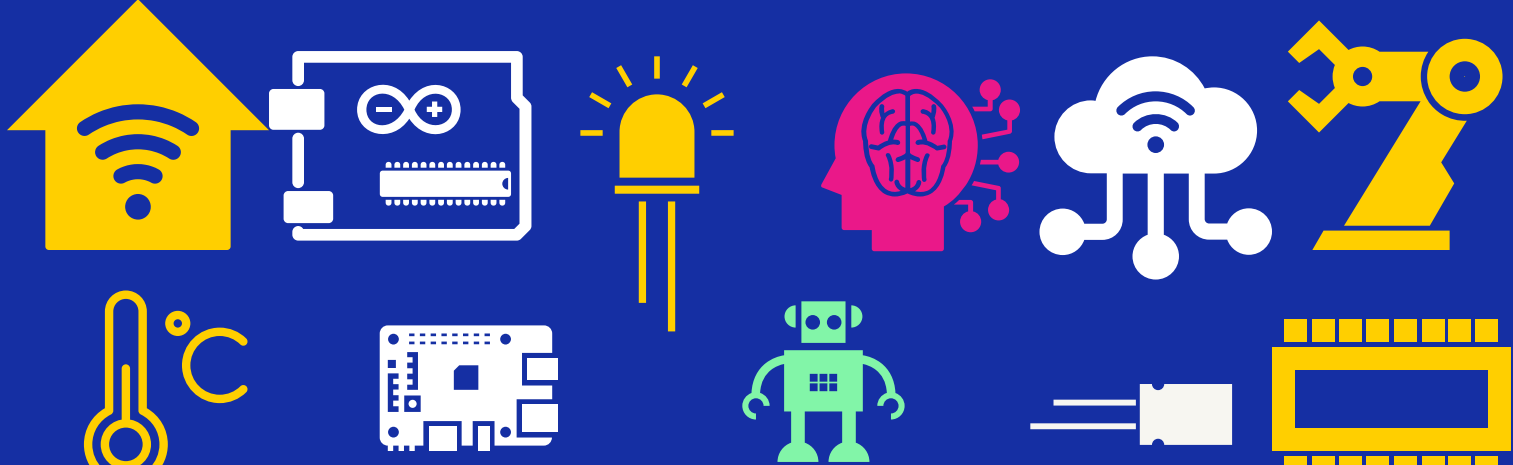
Learn to Build AIOT (AI+IoT) Projects

Summer Internship Training on
Artificial Intelligence of Things (AI+IoT)
Appleton Innovations, Vizag

BECOME AIOT ENGINEER



Summer Internship Training on Artificial Intelligence of Things (AIoT = AI +IoT)

Appleton Innovations is Research and Development Company with office in Visakhapatnam, Andhra Pradesh. The company has made IOT, one of its major focuses. It provides AI, Internet of Things product development services ranging from Home Automation, Smart farming, Smart Agri and Aquaculture. We also develop custom products for Industrial Internet of Things (Industry4.0).

- **Company of IIT Mumbai Alumni**
- **Working towards fulfilment of prestigious Make In India dream**
- **Guided by experts from IIT, TCS and Intel**

The Objectives of AIoT (Artificial Intelligence of Things) Training:

The **Artificial Intelligence of Things** (AIoT) is the combination of **artificial intelligence** (**AI**) technologies with the **Internet of Things** (IoT) infrastructure to achieve more efficient IoT operations, improve human-**machine** interactions and enhance data management and analytics. AIoT technologies integrate the technologies of AI, deep learning, big data, cloud computing, and the Internet of Things (IoT) and have been successfully applied to many areas.

This training program introduces you to the amazing world of **Artificial Intelligence (AI)**, Internet of Things (IoT) and its fascinating applications. Using Arduino development kit, NodeMCU and Raspberry-Pi, you will develop projects like Smart Doorbell using IOT, Face Detection, Home Automation using AI Chatbot, Telegram, Weather Prediction, smart irrigation controller and many other projects.

Training Highlights:

- Learn what "the Artificial Intelligence of Things (AIoT)" means and how it relates to AI and IoT
- Gain knowledge and understanding of fundamental IOT paradigms, architectures, possibilities and challenges, both with respect to software and hardware,
- A wide competence from different areas of technology, especially from computer engineering, robotics, electronics, intelligent systems.
- Learn the basics of Internet of Things and its applications.
- The basic usage of the Arduino, Raspberry Pi & Node MCU environment for creating your own embedded projects at low cost
- How open platforms allow you to store your sensor data in the Cloud
- Learn Cloud DB's such as Blynk, Thingspeak and IFTTT
- How to send data to the Internet and talk to the Cloud.
- How to update sensor readings on Twitter (Social Networking Sites).

- Home Automation using Google Assistant (Voice control)
- Python, Arduino Programming, Embedded C and App development will be covered.
- Understand the approach to solve real-world Machine Learning Problems.
- Have good understanding of Machine Learning (ML) Algorithms.
- Building robust ML Models.
- Learn Machine Learning with Python.
- Generating data from Internet of Thing (IoT) devices and apply data analytics
- Master in Supervised and Unsupervised learning concepts and Modeling.
- Understand the operations of linear regression, polynomial regression, anamoly detection, z-score analysis, Support vector machines, decision tree, K-nearest neighbors and K means clustering.
- Face Recognition using OpenCV and Deep Learning

AIoT Projects Details

During training, students develop the following projects

- Project 1: Voice Controlled Home Automation using Smartphone
- Project 2: Control RGB Led lights using App
- Project 3: Developing Smart Workspace Based IOT with Artificial Intelligence Using Telegram Chat bot
- Project 4: Artificial Intelligence-Based Chat bot for Appliance Control
- Project 5: Use Arduino to upload free data from Environmental Sensors to Thing speak Cloud Server.
- Project 6: Automatically Tweet Sensor Data on Twitter.
- Project 7: Smart Applet projects based on IFTTT
- Project 8: Panic Alaram Health product using NodeMCU and BLYNK APP
- Project 9: Motion Sensor based Home automation
- Project 10: Notification cube for alerts
- Project 11: LED Blinking using Python Raspberry pi library
- Project 12: Temperature and Humidity sensing using DHT-11 sensor and Raspberry Pi
- Project 13: Motion detection using Raspberry pi
- Project 14: Sending Sensor Data to Cloud using Raspberry Pi
- Project 15: Sending emails through your Gmail account
- Project 16: Sending email alerts when Motion detected using PIR sensor
- Project 17: Bit coin Alert System
- Project 18: Predicting Rain by using Simple Logistic Regression
- Project 19: Predicting Number Of Bike Sharing Users using simple linear Regression Model

  Project 20: Fake news detection using Passive Aggressive (PA) algorithm
- Project 21: Temperature Prediction using Polynomial Regression
- Project 22: Restaurant Recommendation System
- Project 23: Sentiment Analysis SVM
- Project 24: Smart Refrigerator by using interquartile range (Anomaly Detection)
- Project 25: IOT Based Smart Irrigation controller
- Project 26:Face Recognition using OpenCV and Raspberry Pi
- Project 27:Smart Doorbell with Face Recognition using OpenCV and Raspberry Pi

Curriculum

Module 1: Introduction to Internet of Things

- Introducing to IOT
- IOT Applications
- IOT Network Architecture
- IOT Device Architecture
- IOT Communication Protocols
- IOT Product Development Overview

Module 2: Introduction to Artificial Intelligence of Things

- Introducing to Artificial Intelligence of Things (AIoT)
- Applying Artificial Intelligence to Internet of Things
- AIoT Applications
- Industry 4.0 and Case studies
- AIoT Product design and architecture

Module 3: Getting Started with Arduino

- A tour of Arduino Board and Hardware: Power Supply, Power Pins, Analog and Digital Pins
- Types of Arduino Boards
- Introduction to Arduino programming
- Variables
- IF-Else conditional statements
- Loops: For, While
- Functions
- Digital Inputs and Digital Outputs
- The serial monitor
- Arrays and strings
- Using Libraries in Arduino
- Arduino data types
- Arduino Commands

Module 4: Sensors, Actuators & Electronics

- Introduction to sensors and types
- Analog Sensors: Temperature, Light Sensor, Potentiometer,
- Digital Sensors: Soil Moisture sensor, Motion Sensor, DHT11 sensor, Button
- Digital Signals
- Basic electronics: resistors, capacitors, diodes, transistors and etc.,
- Introduction to Actuators
- Interfacing Piezo Buzzer
- Interfacing LED’s
- Interfacing RGB LED’s
- Interfacing Relay

Module 5: Wireless Communication Technologies

- Introduction to wireless technologies: WiFi, Bluetooth, Ethernet, LoRaWAN, WiMAX and ZigBee
- Interfacing ESP8266 WiFi Shield
- Interfacing Bluetooth Module
- Interfacing Ethernet Shield

Module 6: IoT using Blynk Mobile Platform

- Installing Blynk application
- Setting up Blynk project
- Install Blynk Library
- Exploring various control widgets: Button, slider, zeRGBa, and timer
- Exploring various display widgets: Value display, Labelled value, Virtual LED Widget and Gauge Widget
- Notification widgets: Twitter, email
- Working with virtual pins
- Writing code and working with each widget

Module 7: Cloud Data Monitoring using Arduino:

- Concept & Architecture of Cloud
- Role of Cloud Computing in IoT
- Tools, API and Platform for integration of IoT devices with Cloud
- Internet of Things platforms for Arduino
- Posting the sensor data online
- Retrieving your online data
- Monitoring sensor data from a cloud dashboard
- IoT cloud platform and integration with Gateway
- Working with Thingspeak platform

Module 8: Smart Applets suing IFTTT

- Introduction
- Automate day to day activities through IFTTT
- Posting updates on Facebook
- Automation with IFTTT
- Sending text message notifications
- Google Voice to control Home Appliances

Module 9: Smart Home with AI Chat Bots

- Introduction to chat bots
- Creating AI Facebook Chat bot using Chatfuel
- Controlling Home Appliances using AI Chat bot
- Introduction to Telegram bot
- Posting sensor data to telegram

- Controlling Home Appliances using Telegram bot

Module 10: Getting Started with Raspberry Pi

- Introducing the Raspberry Pi
- Booting the Raspberry Pi 3
- Raspberry Pi as PC
- Raspberry Pi Remote Access
- Bash Command-line
- Basics of electronic components
- Interfacing LED, Buzzer, Switch
- Raspberry Pi LED Blink Example

Module 11: Introduction to Python Programming

- Why python?
- Embedded C vs Python
- Execution Steps
- Basics of Python
- Understanding Python, Interpreted Languages
- Variables, Keywords, Operators and Operands
- Data Types in Python
- Flow Control, Condition Statement
- Loops, Importing Libraries
- Functions, Classes
- Python and Hardware Access
- Working with numpy, scipy, matplotlib, scikit-learn
- LED Blinking using Python Raspberry pi library
- Temperature and Humidity sensing using DHT-11 sensor
- Motion detection using Raspberry pi
- Sending email alerts when Motion detected using PIR sensor
- Configuring web server.

Module 12: Cloud Data Monitoring using Raspberry Pi:

- Sending sensor data to the cloud
- Tweets on twitter when a sensor is activated
- Sending emails through your Gmail account
- Send sensor data Gmail using SMTP Protocol
- Working with IoT Cloud Platforms

Module 13: MACHINE LEARNING

- Introduction to Machine Learning
- Supervised Learning
- Unsupervised Learning
- Recommendation systems
- Text Analysis

Module 14: PREDICTION

- Simple linear Regression
- Simple Logistic Regression
- Polynomial Regression

Module 15: ANOMALY DETECTION AND Text Analysis

- Anomaly Detection using Z-Score Analysis
- Anomaly Detection using interquartile range
- Fake news detection using Passive Aggressive (PA) algorithm
- Sentiment Analysis using Support Vector Machines (SVM)
- Restaurant Recommendation System

Module 16: FACE DETECTION USING OPEN CV

- Understanding Images & Videos
- Procession Image & Videos with OpenCV & Numpy
- Narrowing to Face Detection on Photos and Live Videos
- Object & Face detection with OpenCV
- Face Recognition

Module 17: SMART DOORBELL USING OPEN CV

- Interfacing Raspberry Pi with door, light and camera
- Designing door access system based on Face recognition
- SMS and Email based notifications

Why Internet of Things (IOT) Training from Appleton Innovations?

- We have research and development team working in IOT and Artificial Intelligence (AI)
- 25 Major Projects will be covered in this Training.
- Our syllabus is professionally designed to cover Basic as well as Advance aspects of AI and IoT using Arduino, NodeMCU and Raspberry-Pi
- Each day of our training is well planned to provide you with Theoretical as well as Practical Knowledge of the module
- Each day will come up with New Practical& Projects which makes the training interesting and exciting.
- Time to time Practical Assignments will be provided to the students, which will help them in doing practice at home.
- Time for Project work /Ideation/concept design will be provided to the students, in which students will develop a project of their own choice. This will encourage Innovative Ideas among students.

Course Duration

- 7 days/ 15 days / 30 days (50 Hours)

Course Fee

- RS 8,850/- per participant
- To book your seat for confirmation, Registration Fee of Rs 1000 per participant to be deposited online into our bank account or offline payment at our office in advance.

Pay registration fee RS 1000 to book your seat using online or offline payment.

For Online Payment:

Pay using the online link: https://rzp.io/l/iots

For Offline Payment:

Bank A/C Number: 006005500875

Bank Account Holder Name: ALPHAPPLETON INNOVATIONS (OPC) PRIVATE LIMITED.

Bank & Branch: ICICI Bank, Dwarakanagar

IFSC Code: ICIC0000060

Course Dates

- Batch 1- 13 April 2020
- Batch 2- 23 April 2020
- Batch3- 4 May 2020
- Batch4- 13 May 2020
- Batch6- 25 May 2020

Eligibility

The pre-requisite for joining this training is zero. Anyone who is interested for this workshop can register it. Students/faculties from all engineering branches can participate in this workshop specially **Electrical and Electronics, Electronics and Communication, Computer Science, Instrumentation, Information Technology**.

Training Certificates

- Certificate of Internship Training
- Certificate of Participation

Take Home Kit for Internet of Things Development

- Arduino Uno
- Raspberry-pi*
- USB Cable
- Breadboard (Regular)
- IoT Development Board

- Assorted Jumper Wires
- Wire Stripper*
- Screwdriver and other tools*
- DHT 11
- Relay Module
- LDR (Photo Resistor)
- Assorted LEDs
- Electronic Components
- Software tools and firmware

Participants will get take-home kit for free. Take-home kit consists of all the above items excluding the items marked with *.

Benefits

- Learn & Interact with renowned Industry Experts.
- Hands on IOT with Arduino, NodeMCU Development Board and Raspberry-Pi
- Build More than 25 AI and IoT Major Projects
- The Certificate of Internship and Participation

With Internship Training, Get Free iLead Program Basic Membership and get following benefits

- Access Video Courses Bundle for 1 year
- Access to Advanced workshops
- Hardware Kit worth RS 2500/- (Already included in Internship Training)
- 5 Minor Projects and 5 Mini Projects
- Guaranteed Internship
- Mentorship
- Placement Assistance
- Certificate of Completion

REGISTER TODAY

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