



# Six Weeks Online Project based Internship Program

## On

### Internet of Things and Machine Learning



#### 1. About ETI Labs:

The mission of ETI Labs is to minimize the gap between Industry and Academics by providing wide range of educational kits with affordable prices and providing a perfect blend of trainings, as well as real-life industry experience to the students which grooms them to be Industry ready.

ETI Labs also provide services to the industry for making their existing product/machines smarter by enhancing their functionality using the Internet of Things & ML technology to increase their productivity and reducing downtime.

#### 2. Aim of Internship:

The aim of this program is to explore the state-of-art technologies in the area of Internet of Things (IoT) and machine learning through a series of sessions delivered by eminent resource persons working in this field and to provide hands on experiences using online simulation tools. The program will help the participants to use the learnt skills for making variety of innovative projects which will motivate them to solve real life problems.

#### 3. Eligibility:

Anybody interested in IoT, data analytics, Machine learning, product development and design can attend this program. Participant should have basic knowledge of c programing.

#### 4. Course Fee (to be paid by online):

- Rs. 2000/-
- Screenshot of the fee's payment should be attached in the online Application Form.

## 5. Internship Scheme

Internship has four components as mentioned below: -

Parameters	Duration (in weeks)	Details	Dates
Online Theory sessions	4	Total 12 sessions in four weeks	June 7 to July 2, 2021
Online Hands-on Practical sessions		Total 16 sessions in four weeks	
Online Quiz		Total 4 sessions in four weeks	
Project development	2	2 weeks' time for project Design, development & Evaluation (08 sessions)	July 5 to July 16, 2021

## 6. Major Contents of the online sessions

Session	Session details
Introduction to Internet of Things	IoT, Embedded system, Types of Computing platforms, Real life projects demonstration.
Context setting & Getting started with Arduino/Tinkercad	Introduction to Arduino programming language. -----Exercises-----
Sensor & Actuator Interfacing	Types of interfaces: GPIO, I2C, SPI, USART, USB. Led interfacing, buzzer interfacing, Pushbutton, motor interfacing Digital sensor interfacing (IR sensor, Temperature & humidity sensor, Light sensor interfacing, Motor interfacing) -----Exercises-----
Cloud computing	Introduction to cloud computing, Cloud architecture, Cloud computing models: Deployment Model & Service Model
ThingSpeak Cloud platform	Introduction to ThingSpeak Cloud platform, uploading sensor data to the cloud, receiving sensor data from the cloud. Generating real time data for further analytics. -----Exercises-----
IoT Data Communication & Protocols	Data communication layered architecture, TCP/IP Versus IoT Network stack, Client/ server architecture, Request/Response versus Publish/Subscribe architecture, HTTP versus MQTT. Publishing sensor data on cloud using MQTT protocol. -----Exercises-----
Python Programming & installation	Python installation & Introduction to Python programming.

Data analysis & Machine learning	Introduction to data science & Machine learning. Python libraries for data analytics: NumPy, Pandas. Data analytics on data sets. -----Exercises-----
Real time data analysis & visualization	Fetching data from the cloud, Real time graph plotting & data visualization, data analysis using above libraries on real time data using Matplotlib
Introduction to Machine Learning	Classification of ML algorithms and their applications. Supervised Learning – Regression & Classification. Unsupervised Learning.
3D printing	Introduction to 3D printing using tinkerCad platform. Hands-on designing of various modules, exporting design file, demo of 3D printing machine.
Project Development	Real Life project covering all the topics covered during the workshop, Ideation, Mentoring, Project Evaluation.

## 7. Project Work

<b>Project Work will involve all the topics covered in the session</b>	
*Some of the suggested topics of the Project Work are mentioned below	
*More topics may be discussed during the online interaction (in sessions)	
<b>1</b>	Soil monitoring & recommendation system
<b>2</b>	Air quality monitoring & recommendation system
<b>3</b>	Weather monitoring & prediction system
<b>4</b>	Load forecasting system
<b>5</b>	Smart Parking system
<b>6</b>	Smart Drone
<b>7</b>	Smart security system
<b>8</b>	Smart robot

## 8. Important Dates

Last date to apply	:	May 4 <sup>th</sup> June 2021
Internship Starting Date	:	June 7 2021
Internship Completion Date	:	July 16 2021
Duration of online sessions	:	June 7 2021 to July 2 2021 (weekdays)
Duration provided for project work	:	July 5 2021 to July 16 2021
Submission of Final Report	:	By July 17 2021
Issuance of Internship Certificate	:	July 20 2021 (after successful completion)

9. Registration Link: <http://www.etilabs.com/blog/2021/05/18/summer-training-program-2021/>

Any queries could be emailed at [manasimishra@etilabs.com](mailto:manasimishra@etilabs.com)

10. Details for fee payment

a. For Payment using Paytm Scan below QR code:



or

b. For Bank Transfer, use below details

S.N.	Particulars	Details
1	Name & Address of the Beneficiary	ETI Labs Private Limited
2	Account Number of the Beneficiary	09001100018801
3	Name & Address of the Bank Branch	Punjab & Sind Bank, GGSIP University, Kashmere Gate Delhi - 110006
4	Fee (Amount to be transferred)	Rs. 2000/-
5	IFSC Code	PSIB0001098