

# CAPSTONE PROJECTS

Online Certification In  
**IoT, Cloud Computing and Edge AI**

By E&ICT Academy, IIT Guwahati

# ABOUT THE

## IIT GUWAHATI

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## E&ICT ACADEMY, IIT GUWAHATI

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Electronics and ICT Academy aims to provide specialized training to the faculties of Engineering, Arts, Commerce, Science colleges and Polytechnics institutes by developing short term training programmes on fundamental and advanced topics in IT, Electronics & Communication, Product Design, Manufacturing. In addition, the Academy conducts specialized customized training programmes and research promotion workshops for corporate sector & educational institutions.

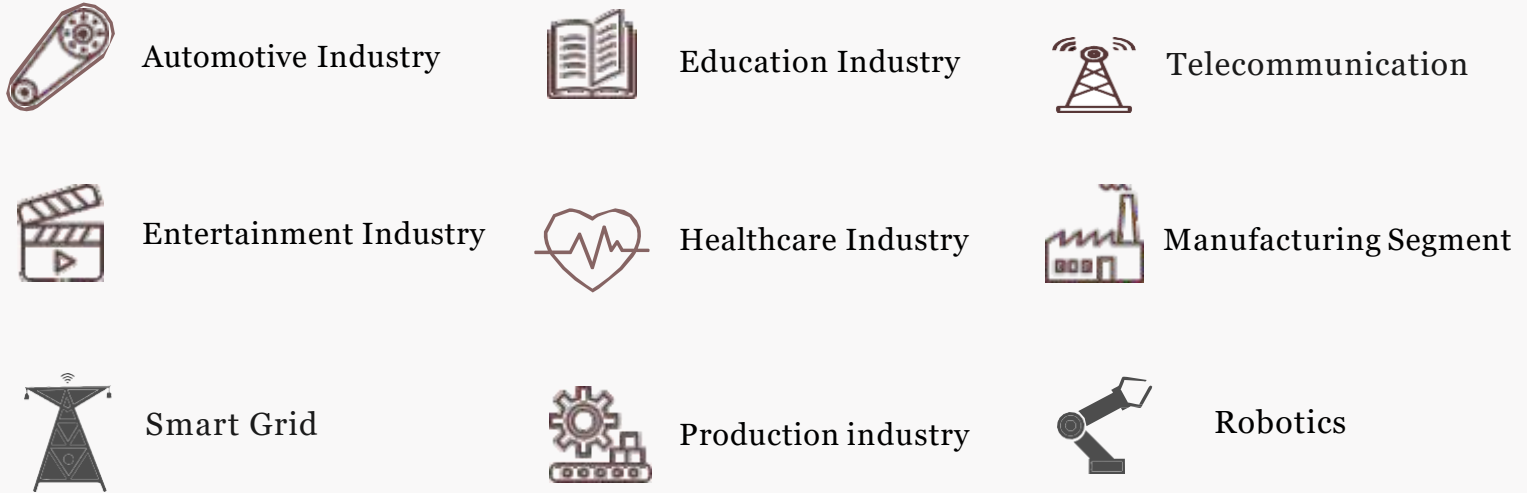


Indian Institute of Technology Guwahati, the sixth member of the IIT fraternity, was established in 1994. The academic programme of IIT Guwahati commenced in 1995. At present the Institute has eleven departments and three inter-disciplinary academic centres covering all the major engineering, science and humanities disciplines, offering BTech, BDes, MA, MDes, MTech, MSc and PhD programmes. Within a short period of time, IIT Guwahati has been able to build up world class infrastructure and a reputation for itself.



# CAPSTONE & LIVE SESSION PROJECTS

The projects and assignments will help you accumulate real-world experience in different industries.



# CAPSTONE PROJECTS

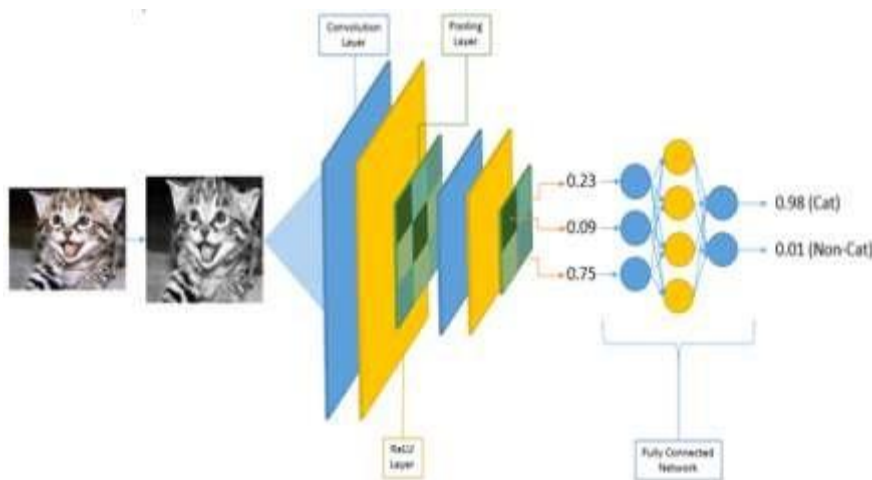
Industry projects will be a part of your Certification Program in **Basic Embedded System and IoT** to consolidate your learning. Industry projects will ensure you have the real-world experience to start your career in Embedded & IoT.

- 10+ Essential Tools
- Designed by Industry Experts
- Get Real-world Experience

## IMAGE CLASSIFICATION USING EDGE IMPULSE

Image classification Image Classification is one of the most fundamental tasks in computer vision. And for a reason— It has revolutionized and propelled technological advancements in the most prominent fields, including the automobile industry, healthcare, manufacturing, and more. Adding sight to your embedded devices can make them see the difference between poachers and elephants, do quality control on factory lines, etc.

**Hardware Tools you will be using:** Nodemcu, Soil moisture Sensor relay module , DHT11 Sensor



## IOT BASED CONTACTLESS BODY TEMPERATURE MONITORING SYSTEM

The person who monitors the temperature of the people need to spend more time and it also takes more effort. So, in order to avoid this time-consuming process, we have an IOT based temperature monitoring and data collection system. In today's world, the Internet of Things is revolutionizing our life by developing a number of systems which can be monitor temperature remotely.

**Hardware Tools you will be using :** Nodemcu, Relay Module



## REAL-TIME OBJECT DETECTION

Real-time object detection is the task of doing object detection in real-time with fast inference while maintaining a base level of accuracy. It is applied in numerous territories of image processing, including picture retrieval, security, observation, computerized vehicle systems and machine investigation.

**Hardware Tools you will be using:** Nodemcu, MPU6050 sensor



## WEATHER MONITORING SYSTEM

The aim of weather monitoring system is to detect, record and display various weather parameters such as temperature, humidity. This system makes use of sensors for detecting and monitoring weather parameters and then this collected information is sent to the cloud which can be accessed using the internet. It works in different conditions.

**Hardware Tools you will be using:** Nodemcu, Ultrasonic Sensor



## Vibration Analysis



## TEMPERATURE DATA RECORD ON AWS

### IOT

Amazon is not only in e-commerce but also focusing on IoT and providing cloud-based service named as AWS IoT. Here, AWS IoT stands for Amazon Web Service Internet of Things. This service allows us to connect our devices to the internet for processing, operating and exchanging data securely. We can connect our temperature Data record on AWS IoT Core

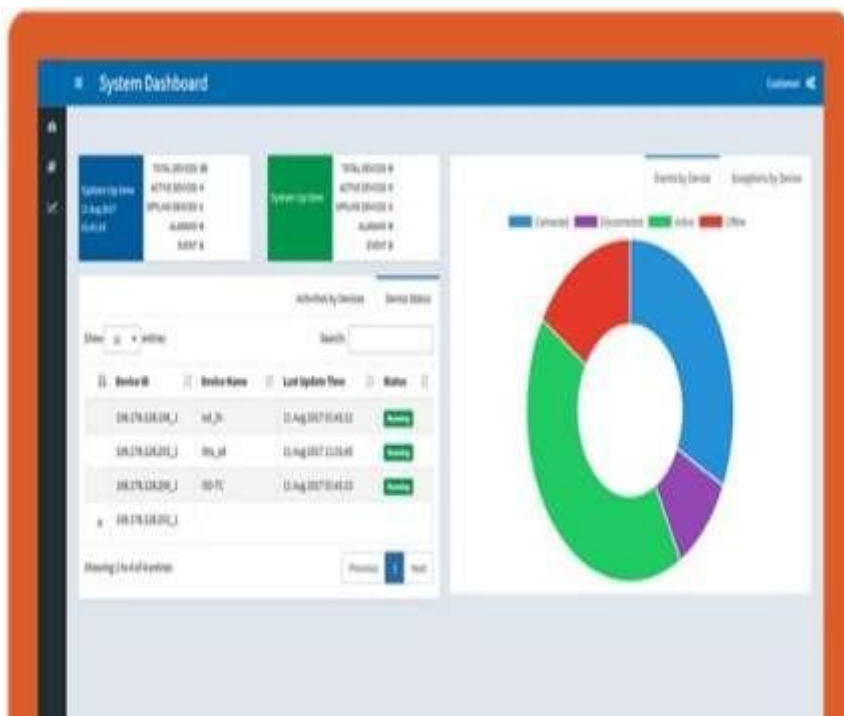
**Hardware Tools you will be using:** Nodemcu, Ultrasonic Sensor

## VIBRATION ANALYSIS USING EDGE IMPULSE

Vibration analysis is defined as a process for measuring the vibration levels and frequencies of machinery and then using that information to analyse the behaviour of any machines and their components and on the basis of data collected from vibration analysis, we analyse how healthy machines.

**Hardware Tools you will be using:**

Nodemcu, DHT11



## IOT FLOW BASED

### DASHBOARD

An IoT dashboard is the user interface within an IoT platform that enables users to monitor and interact with connected devices through graphs, charts and other tools and UI elements. It allows users to manage every aspect of their all-connected devices as well as gain perspective on environment through visualization of his device data.

**Hardware Tools you will be using:**

Nodemcu, MQ135 Sensor



## SMART HOME USING GOOGLE FIREBASE

A smart home system is the system that connects with your home appliances to control any specific task by remotely. We can use smart home system to programme our sprinklers, set and monitor our home security system and cameras, and can control home appliances like our refrigerators, air-conditioning and heating.

### Hardware Tools you will be using:

Nodemcu, DHT11, MQ135 Sensor, OLED Display

## IOT BASED WAREHOUSE MANAGEMENT SYSTEM

The rise of sales in e-commerce is good news when it comes to revenue reports and a challenge for warehouse managers —as retailers scale and expand, keeping track of large volumes of inventory becomes a demanding task. To meet the needs of an on-demand shopper, warehouses turn to IoT applications. The warehouse is the right platform for launching Internet of Things projects and validating the opportunities of the technology. That's why there's a wide range of IoT applications and use cases.

### Hardware Tools you will be using:

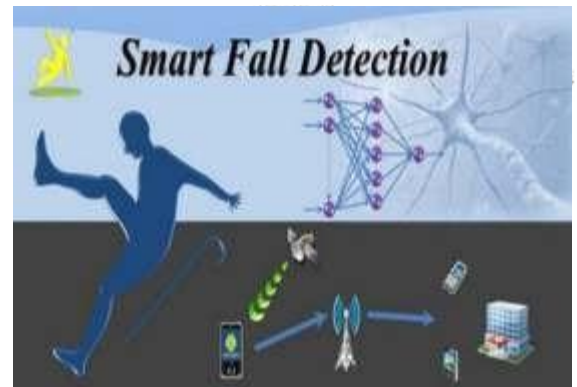
Nodemcu, DHT11, MQ135



## IoT BASED FALL DETECTION SYSTEM

Emergencies can happen suddenly and without warning. That is why fall detection technology is an invaluable, life-saving feature in medical alert systems. If you can't press the help button after a fall or during a medical emergency, the automatic fall detection feature of a medical alert system can give you the peace of mind that you will still receive the help that you need. These systems automatically activate the sensors if the user suffers a fall.

**Hardware Tools you will be using:** Nodemcu, MPU6050 Sensor





## Program Information:

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