The IoT Academy
Connecting The Unconnected

Research is the Root of all Quest

Indian Institute of Technology Guwahati

Anudaksh
Training cum Internship Program In
Embedded System & IoT
By IIT Guwahati, RFRF & The IoT Academy

ABOUT
IIT GUWAHATI

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.

ABOUT

Research for Resurgence Foundation (RFRF)

RFRF has been planned & designed through aspiration of true-researchers, academicians and policy makers. This foresighted movement has solution oriented approach for ultimate goals of achieving human– ecosystem balance. RFRF has signed MoU with 128+ higher education institutes and universities

ABOUT
The IoT Academy

OUR MISSION

The IoT Academy insists on academia and industrial collaboration. "The IoT Academy" can help you to complete your projects, POC and provide needed support in training to acquire skills. We emphasize hands-on training and experiments. This provides the learner an edge to prepare better for job and interviews. For training purposes we have developed experimental boards in-house. Our collaborations with various industries help us to keep our knowledge up to date that translates into our training courses and to develop edge over other training Institutes.

OUR VISION

At The IoT Academy We believe that the future is about Unified and Converged technologies as reflected in our vision statement. Every aspect of life will eventually lead in bringing forth a unified world of immense possibilities.

The IoT Academy is our Training & Development unit which was set in December 2017 to enable us to prepare Skilled engineers as per Industrial Demand. The IoT Academy has made a niche name for itself and has provided training to more than 1000+ trainees so far from various discipline, sectors, places both on campus and at our institute.

The IoT Academy is a reputed ed-tech platform that offers training and courses in emerging technologies such as the Internet of Things, Embedded Systems, Machine Learning, and Edge AI. We aim to focus on cutting-edge technical education and enterprises that would contribute new contributions to society.

ABOUT
Anudaksh

ANUDAKSH
(Anusandhan, Niyojaniyata,
Udyamita, and Dakshta),
an Initiative to
upskill Students, Faculty Members,
and Working Professionals

OUR MISSION

- Train 50 Lakhs students in 05 years
in various domains, such as VLSI,
Computer
Science, Data Science, IoT, Bio-
informatics, Artificial Intelligence,
Machine Learning,
Blockchain, Digital Marketing etc. in
minimum 500 universities nationwide
Upskilling towards employability by
Gyan Setu
Skill development towards
entrepreneurship by Kaarya Setu
Boosting research base in India by
Shodh Setu

Anudaksh

Program Benefits

- ✓ **Certificate of Completion from IIT Guwahati, RFRF and The IoT Academy.**

- ✓ **Internship Certificate From UniConverge Technologies.**

- ✓ **Live Instructor-led Classes.**

- ✓ **Exposure to Industrial Based Project.**

- ✓ **Doubt Clearing Sessions.**

- ✓ **Career Guidance and Placement Support.**

- ✓ **Intensive Learning Experience.**

- ✓ **Industrial Visit.**

Skill India ➡ **Self-Reliance**

PROGRAM CURRICULUM: LEARNING PATH

Master Industry-relevant skills for new age **Embedded System & IoT** through the most relevant curriculum designed by IIT Guwahati, RFRF & The IoT Academy leaders from the industry.

C Programming
Module **01**

Keywords and Data types, Operators, Flow control, Loops, Memory allocation, Storage class, Functions, Arrays, Sorting and searching techniques, Strings, Pointers, Function pointer, Volatile, Enumeration, Structure and union, File handling concepts Dynamic memory allocation, Command line arguments

Basic Embedded Systems
Module **02**

What is Embedded System, What is Microprocessor, Processor Architectures, Difference between microprocessors and microcontrollers, Types of Microcontrollers, 8-bit/16-bit/32-bit Microcontrollers, Programming Languages for Embedded system

NODEMCU(Esp8266)
Module **03**

Install IDE Software , Introduction to Nodemcu(Esp8266), Pinout of Nodemcu, Programming Of Nodemcu, Weather monitoring solution, Automatic street lights

Connectivity protocols (wired and wireless) and Sensors/Actuator
Module **04**

UART/USART, SPI, I2C, Wifi, LORA, USB Sensors, Sensors types-analog and digital, Temperature/humidity sensor, Ultrasonic sensors, Photoresistor, Smoke sensor, Gyroscope sensor, Accelerometer, OLED display

Introduction to IoT and Architecture
Module **05**

what is IoT?, IoT Architecture, Components of IoT, IoT Applications, IoT Gateways

IOT Protocols
Module **06**
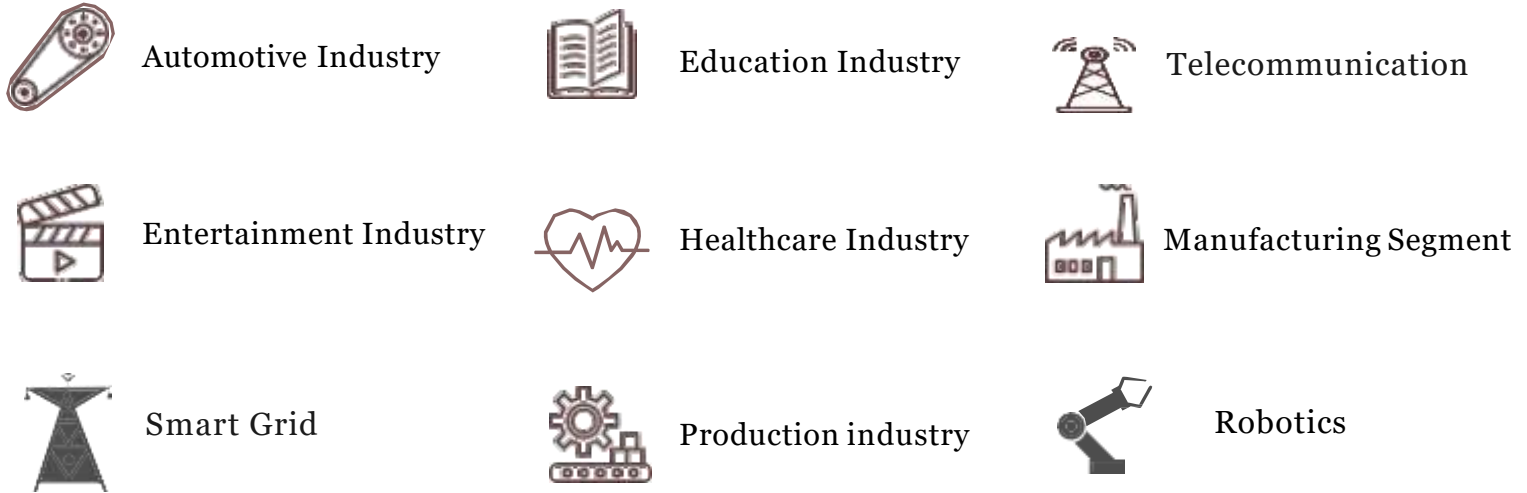
HTTP/REST, MQTT, COAP

IOT cloud services
Module **07**

IoT Cloud Architecture, SAAS, PAAS, IAAS, Thingspeak cloud, Google Firebase

2 WEEKS PROJECTS

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

Automotive Industry

Education Industry

Telecommunication

Entertainment Industry

Healthcare Industry

Manufacturing Segment

Smart Grid
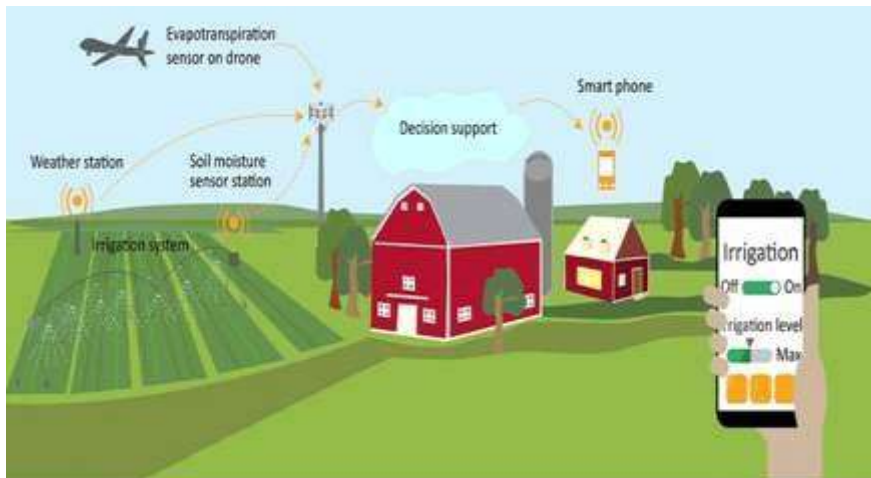
Production industry

Robotics

2 WEEKS PROJECTS

Industry projects will be a part of your Certification Program in **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.

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

IOT BASED SMART IRRIGATION SYSTEM

Water management is paramount in countries with water scarcity. This also affects agriculture, as a large amount of water is dedicated to that use. The lack of fresh water is a rising concern, particularly in the Mediterranean countries or southern Asian countries such as India. We determine the parameters that are monitored in irrigation systems regarding water quantity and quality, soil characteristics and weather conditions. We provide an overview of the most utilized nodes and wireless technologies.

Hardware Tools you will be using: Nodemcu, Soil moisture Sensor relay module , DHT11 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 smarthome 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, Relay Module
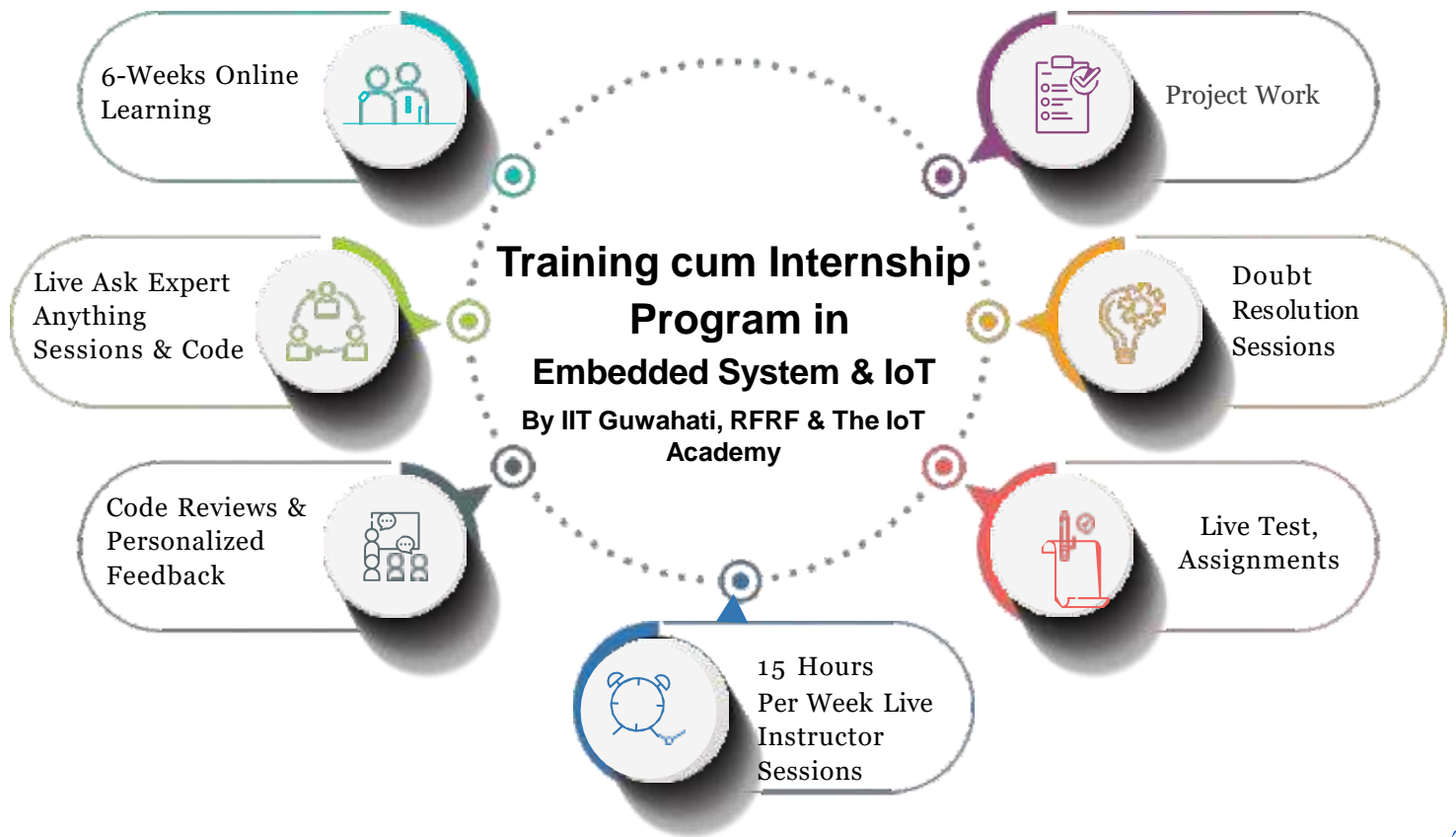
IoT BASED FALL DETECTION SYSTEM

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 PEDAGOGY

Learn from one of the best faculty in India through live online sessions. While Academic Professors will help you learn **Embedded System & IoT** industry experts will impart practical knowledge of **Embedded System & IoT** techniques through real-world projects.

6-Weeks Online Learning

Live Ask Expert Anything Sessions & Code

Code Reviews & Personalized Feedback

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Project Work

Doubt Resolution Sessions

Live Test, Assignments

15 Hours Per Week Live Instructor Sessions

Benefits for Trainees

- ✓ **Curriculum designed by leading industry experts and faculties**
- ✓ **Certification by IIT Guwahati IIT Guwahati**
- ✓ **Guest Lectures by IIT Faculties**
- ✓ **Completely Hands-on based Learning mentored by Industry Veterans**
- ✓ **Industry Oriented skill sets**
- ✓ **Industry Grade Capstone Projects**
- ✓ **Job assistance/guidance through Industry Partners**
- ✓ **Workshops on Entrepreneurship and Business Ecosystem**

TOP RECRUITERS

TRAINING & INTERNSHIP CERTIFICATION

Upon successfully completing this program, you'll earn **Training cum internship program in Embedded System & IoT** that is co-branded by **IIT Guwahati, RFRF & The IoT Academy** as the Knowledge Partner. This certificate will testify to your skills as an expert in **Embedded System & IoT**
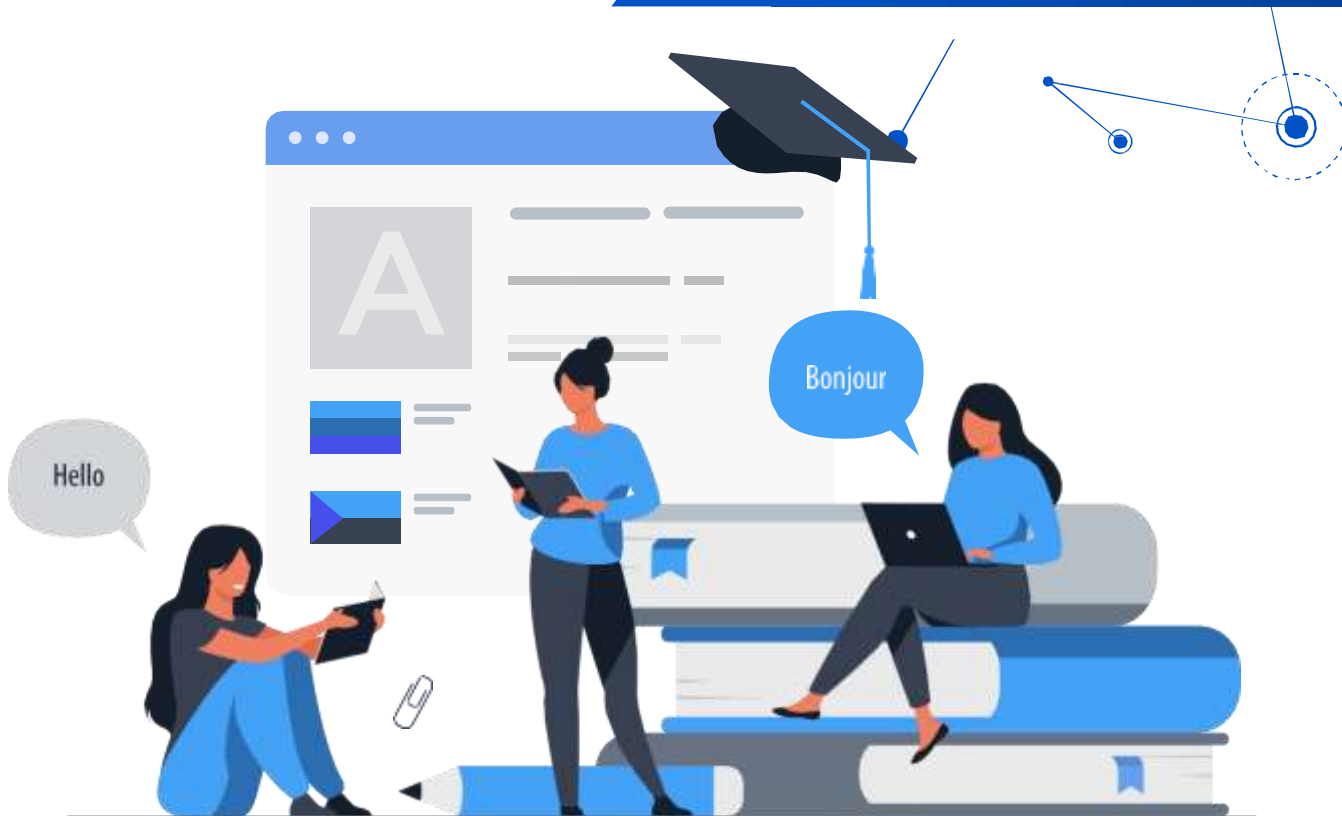
Training Certificate

Internship Certificate

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