INTERCON
LEARN. THINK. INNOVATE

جامعہ ملیہ اسلامیہ
जामिया मिल्लिया इस्लामिया
Jamia Millia Islamia
A Central University

Internet Of Things
&
Machine Learning Conference

Powered By:

IOTINTERCON LABS

A Unit of IOTINTERCON Pvt Ltd

About Us

IOTINTERCON LABS is a designer and developer of **IoT devices and IoT development board**. Connecting things for better user experience and collecting important data from connected devices and applying Machine Learning on top of collected IoT data.

Providing security and data encryption for IoT solutions and cloud based services.

Understanding the need of technical enthusiast to learn and endeavor future technology of IoT.

Creating platform to understand system integrity and solving its complexity.

Our Mission

Our mission is to enhance and align students skills towards latest industrial technologies through hands-on practice on development platforms and computer languages.

We work on the concept of **BEEP**(Best entrepreneurs and employee program).

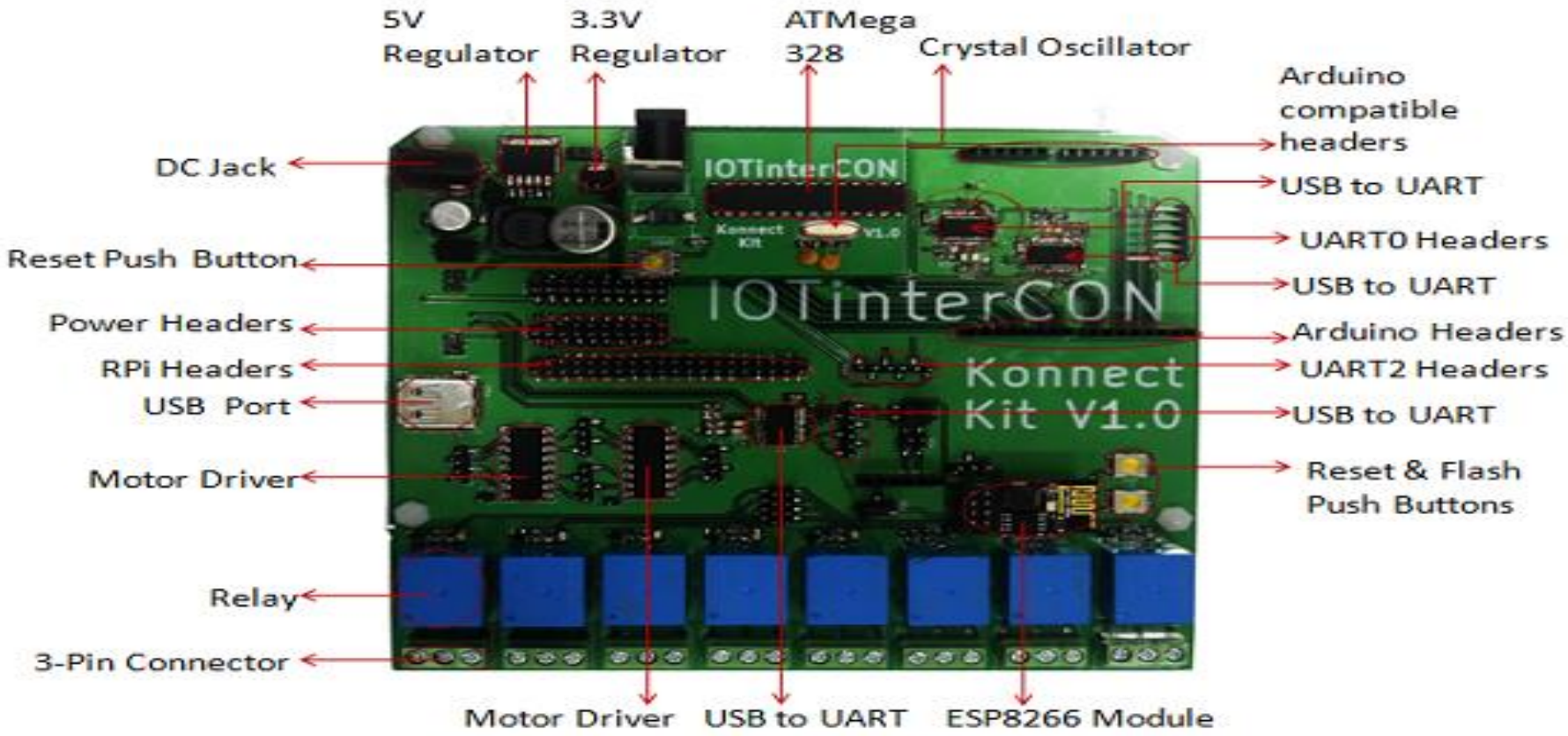
What we do

- We work for industries, who work on futuristic technologies like IoT, Machine Learning, Artificial Intelligence and Cloud technology etc.
- We design and develop IoT end to end Solution.
- We provide application oriented learning to engineering students.
- We create interface between students and industrial experts.
- Guest lectures for students to understand what industry wants from them.

Our Products

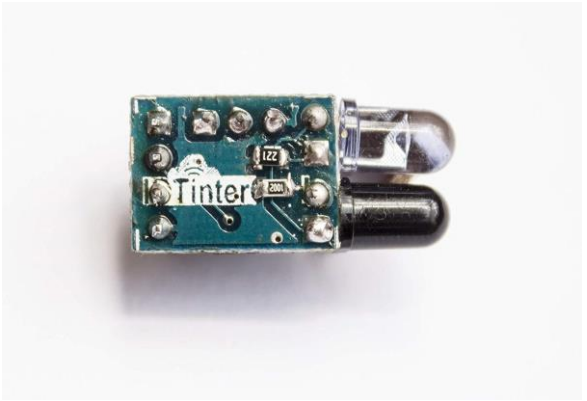
Konnect Kit V1.0

Using Konnect Kit you can monitor, control and generate alarms for any electrical device

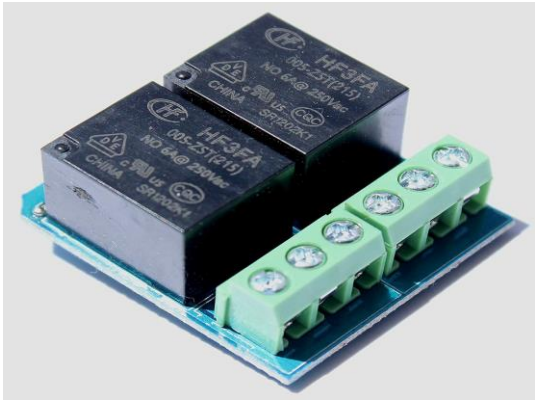


Our Products

IOTINTERCON RS232/Serial/USB Controlled 16 Channel Relay Board

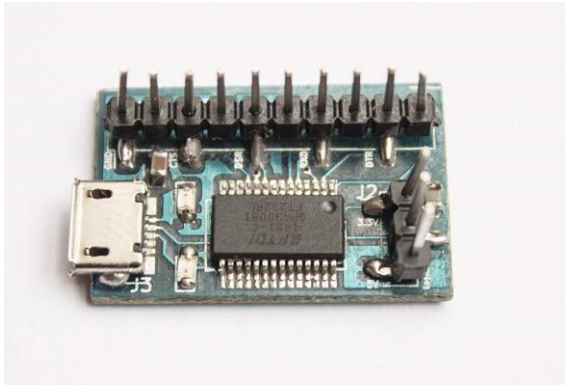


IR/Proximity Sensor

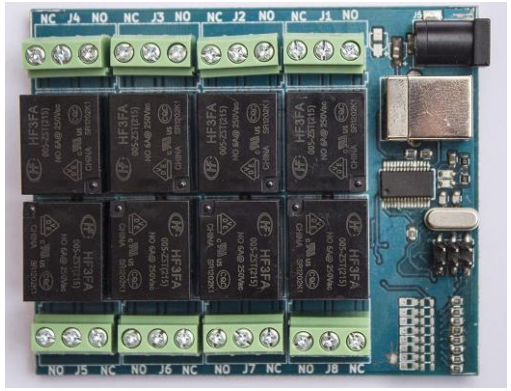


2 Channel Relay Module

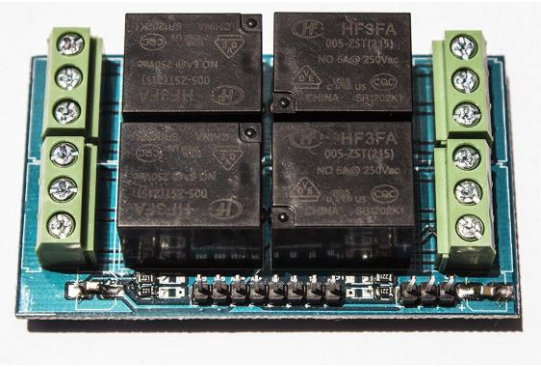
Our Products



USB to Serial/RS232/UART Converter



RS232/Serial/USB Controlled 8 Channel Relay Module

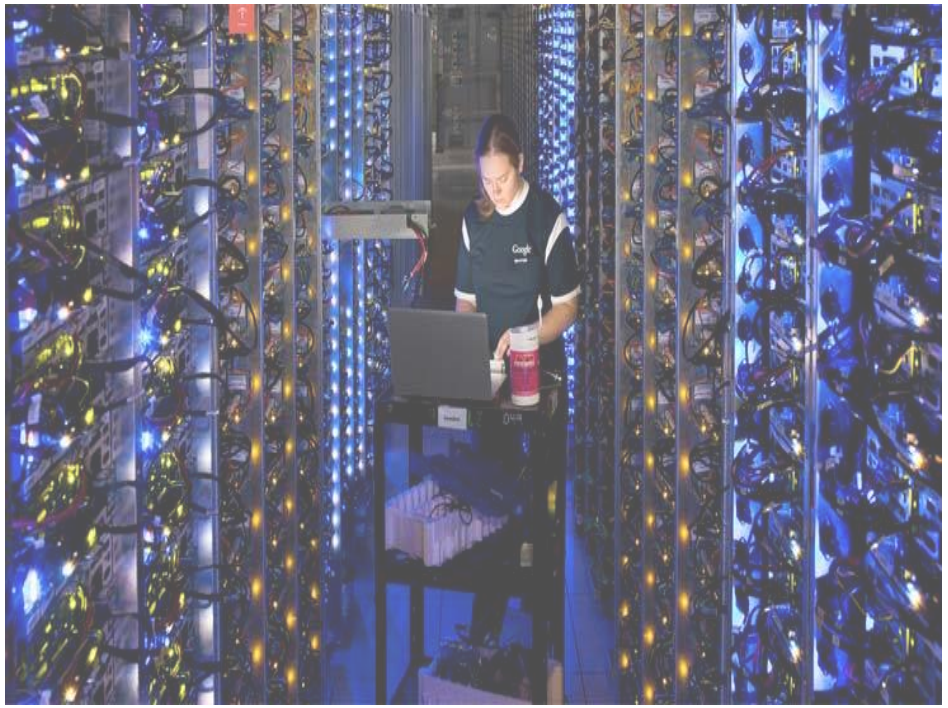


4 Channel Relay Module

Our Products

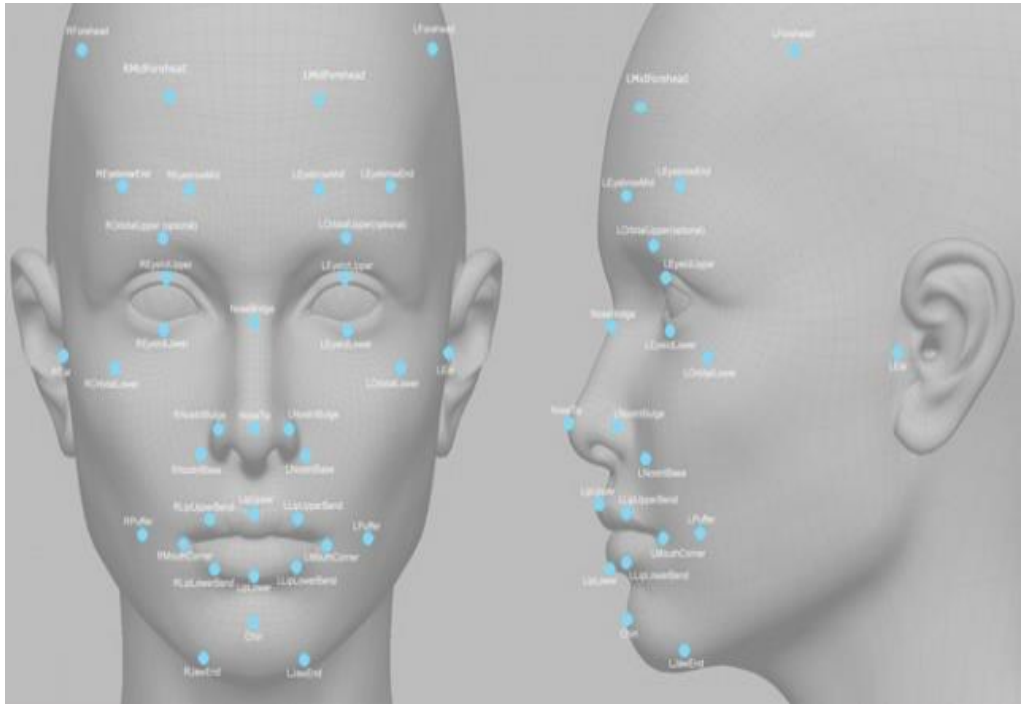
Industrial Automation

Private Cloud data Centers

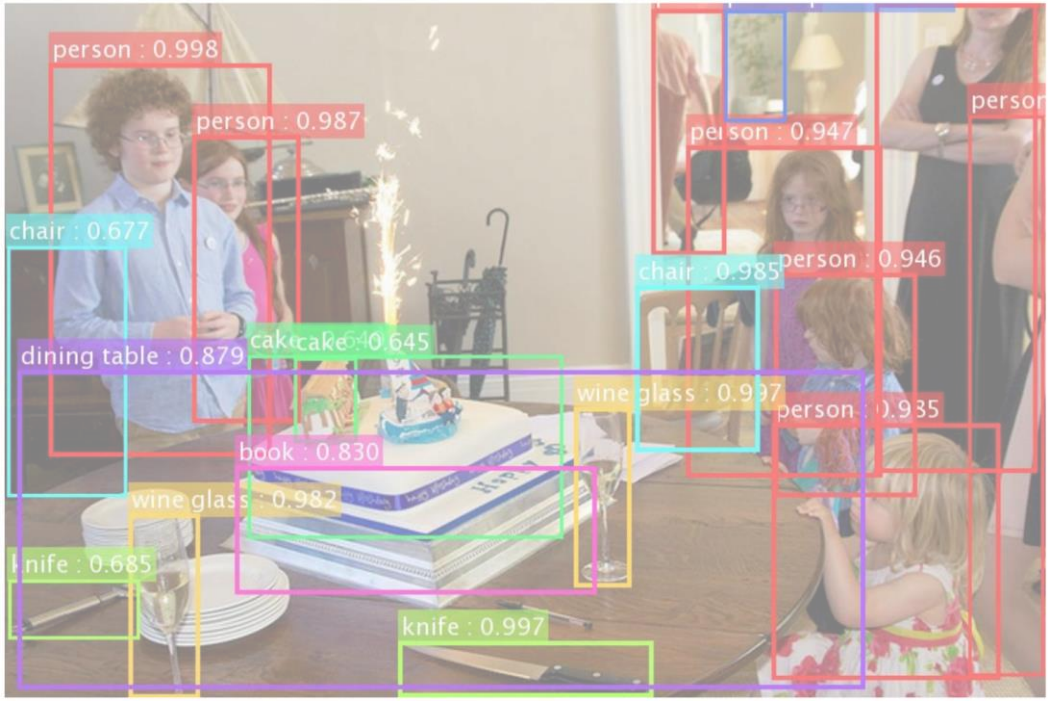


Our Products

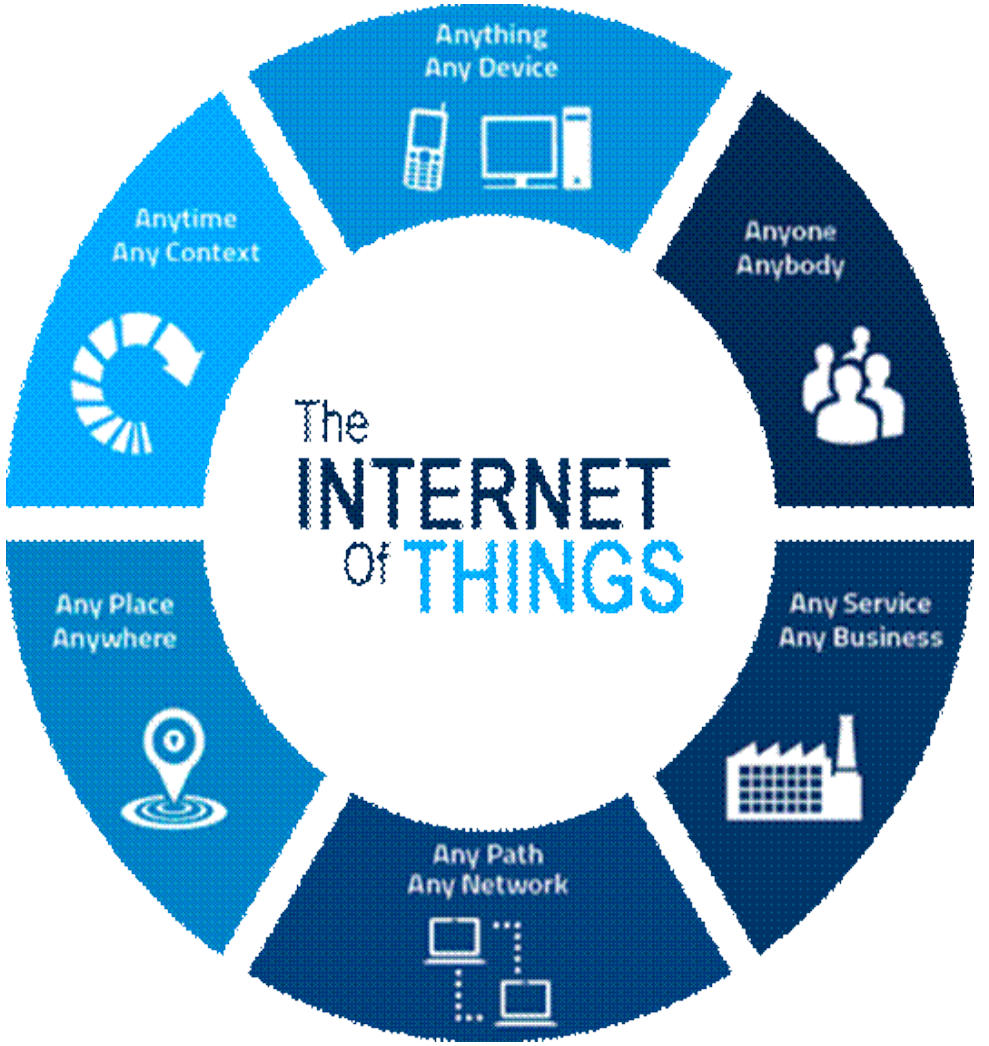
Face Detection algorithm for smart attendance system



Smart Object Detection System



Internet Of Things



- Internet of things is the network of connected devices or Things.
- The connected devices are interacting with the physical world either through HID's, sensors or actuators
- Connected devices may or may not compute data collected from sensors, HID's or from other devices
- Devices can share information with each other using centralized / decentralized server or directly

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1. Scope of IoT
2. Applications of IoT
3. Protocols in IoT
4. Sensors in IoT
5. Demo Of IoT end to end Solution
6. Design and Architecture of IoT
7. Technical Architecture
8. Tech Stack
9. Code Walkthrough of end to end Solution

Scope of IoT

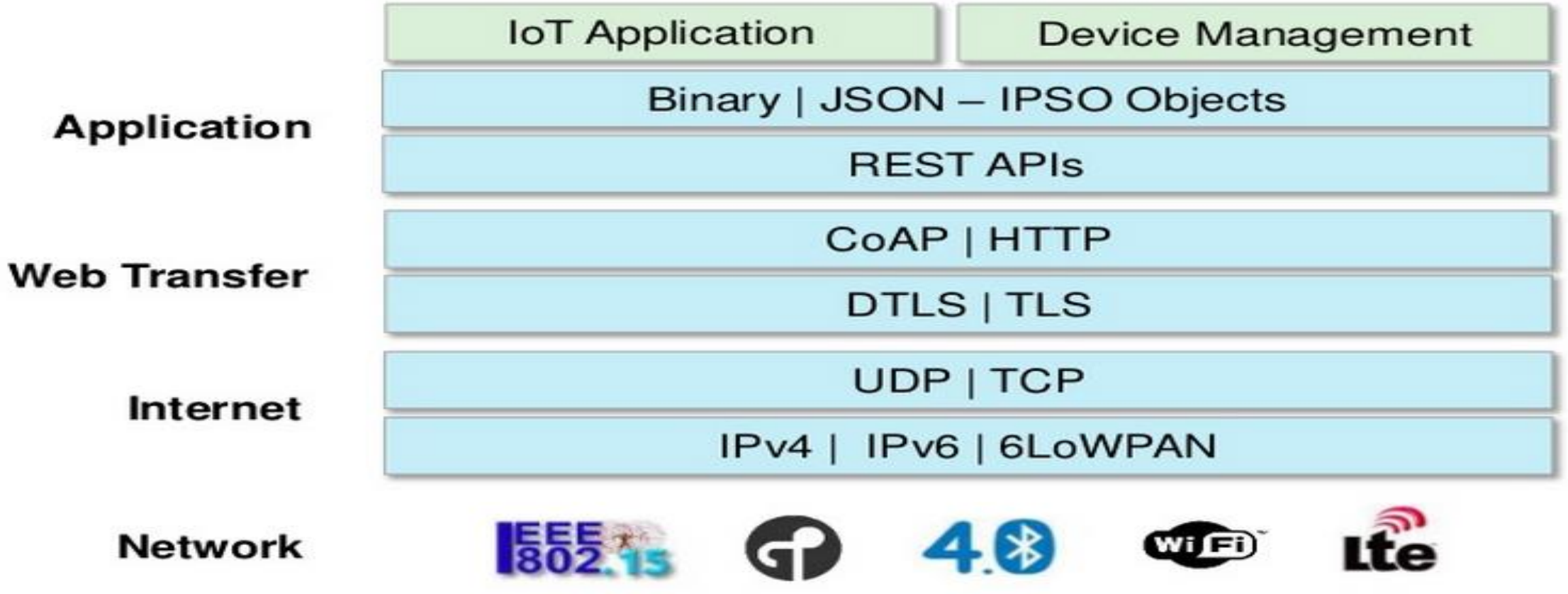
- There is a great scope of IOT in Education – Connected and Smart classes
- Transportation, Health Care, Home and Industrial Automation are very hot sectors in the field of IOT
- IOT security and security algorithms are very important and crucial filed of IOT
- As IOT involves Hardware (Sensors), Software (Decision making and computing algorithms), connectivity and power.
- So there is a great requirement of efficient sensors to be designed, secure and optimized algorithms/software and energy efficient ASIC to be manufactured

Applications of IoT

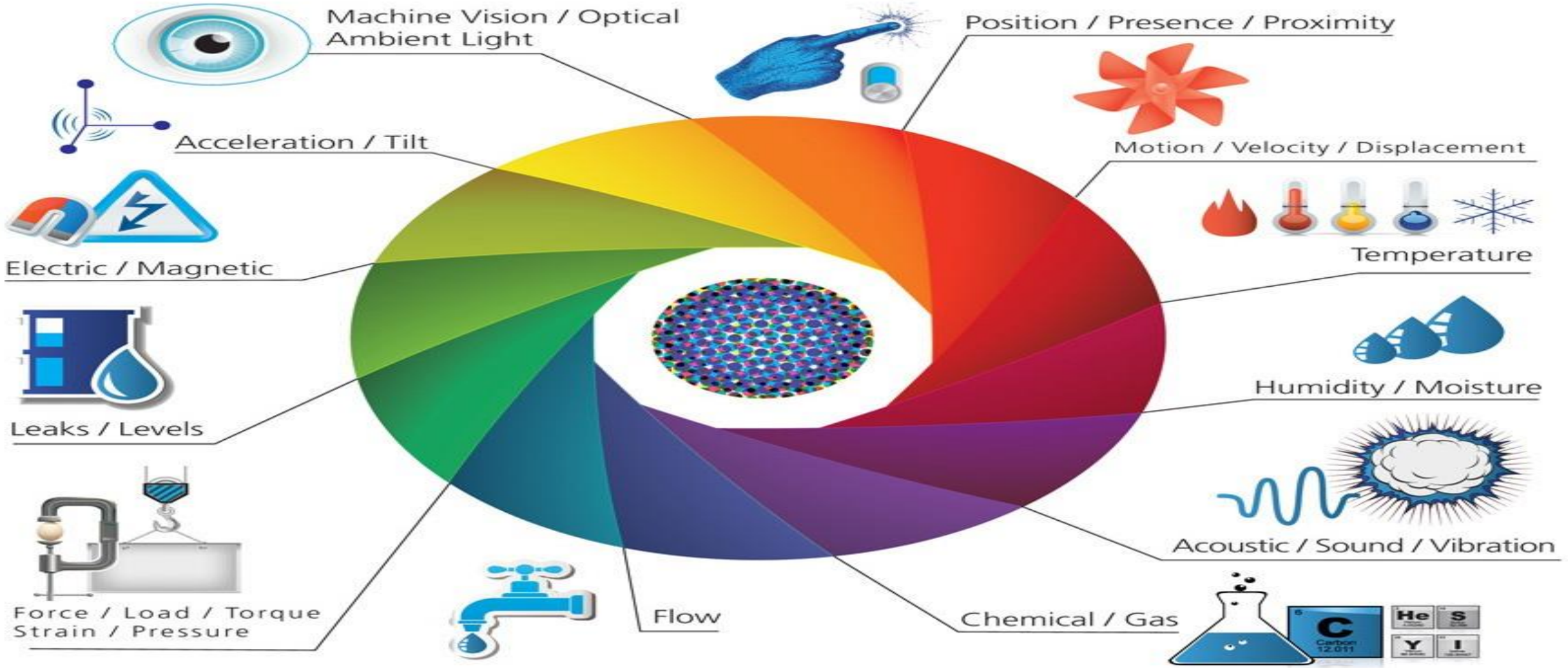
- IOT can take over any job which can be automated and done by humans or even which human cannot do
- In Agriculture – We can create a connected network with the help of IOT to observe the soil moisture and other content and control the irrigation fertilizers and other things to increase the yield
- In Health Care – We can observe different habits of sick person and collect relevant data which may be useful for doctor for better treatment. Like sleeping pattern of last night, pulse, temperature and other things. Fitbit is a good example
- IOT in Transportation – Ola and Uber is very good example as well we can do shipment tracking and many more
- IOT in Home and Industrial automation

Protocols in IoT

Remember the I in IoT!



Sensors in IoT



1. **Temperature Sensors :** These sensors allow an IoT device to know the temperature of objects and function according to it.
   Applications: Thermostats etc.

2. **Proximity Sensor** : Commonly used in security, safety or efficiency applications, Proximity sensors are used to detect motion.
   Applications: These sensors are mostly used in retail industry, parking and museums etc. for safety and security.

3. **Optical Sensors:** Optical sensors have been a great use in digital cameras for years. Optical Sensors can emit, receive and convert the light energy into digital signals.
   Applications: Among other places, Optical Sensors are used in mining operations, oil refineries and chemical plants.

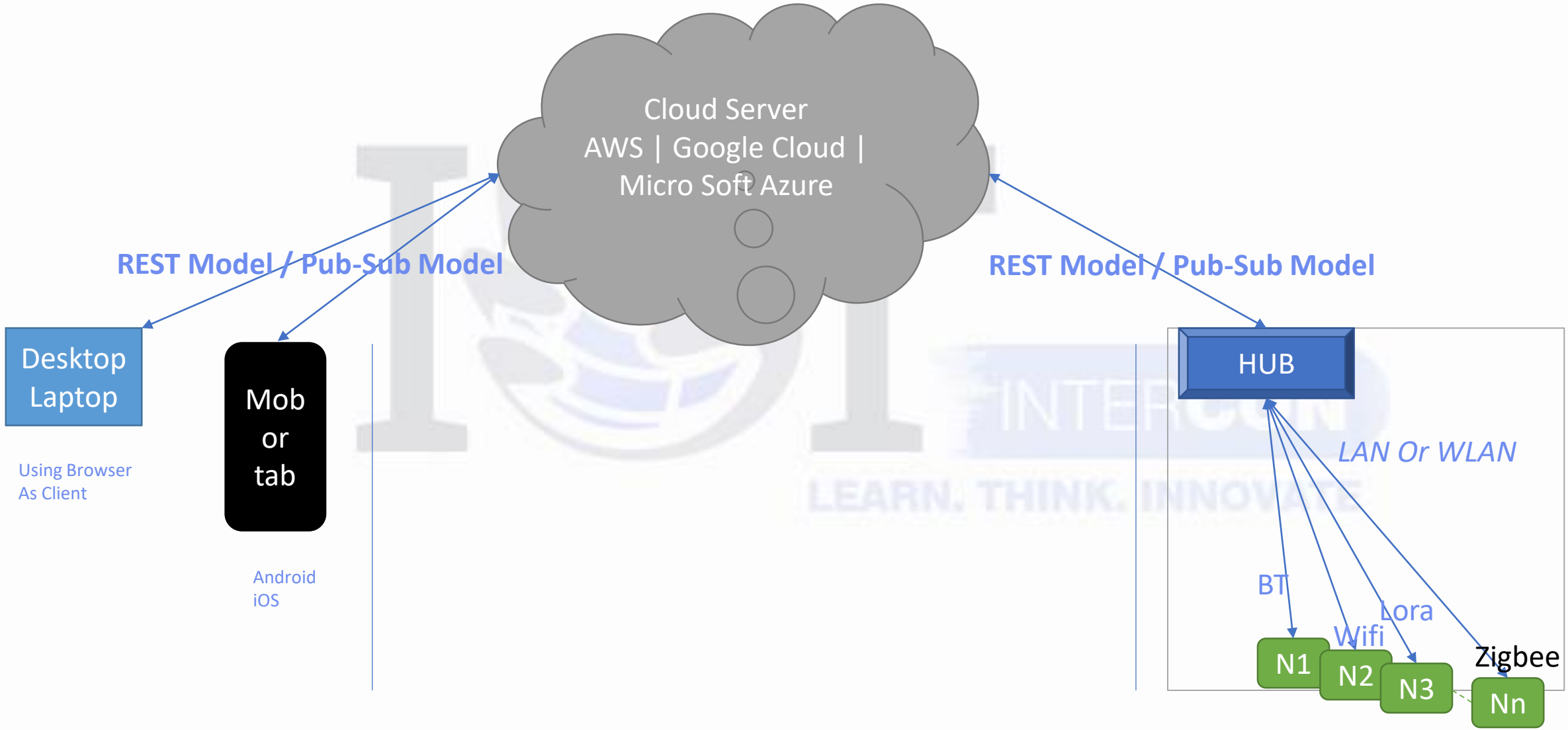
4. **Pressure Sensors :** These sensors are used to detect pressure of a liquid, gas etc. These sensors work by converting physical power into electronic signals and then sending it into the processors of the device.
   Applications: Pressure sensors are used in touch screen devices, weather monitoring devices and in automotive industry.

5. **Humidity Sensors:** In many cases, knowing humidity of environment alongside Temperature is necessary for better operations.
   Applications: Humidity sensors are mostly used in thermostats and other weather related IoT Devices.

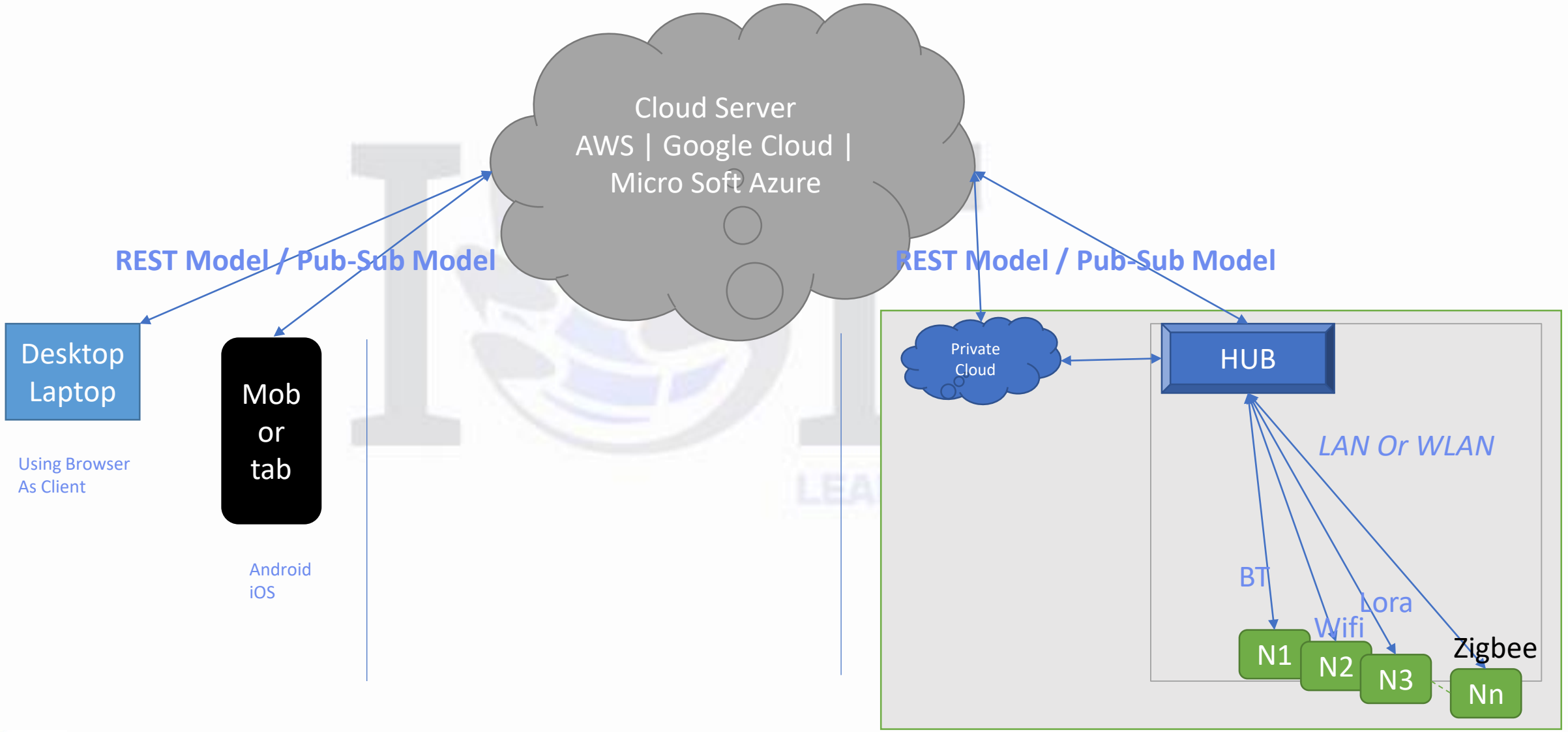
Demonstration of End To End Solution

http://13.233.204.31

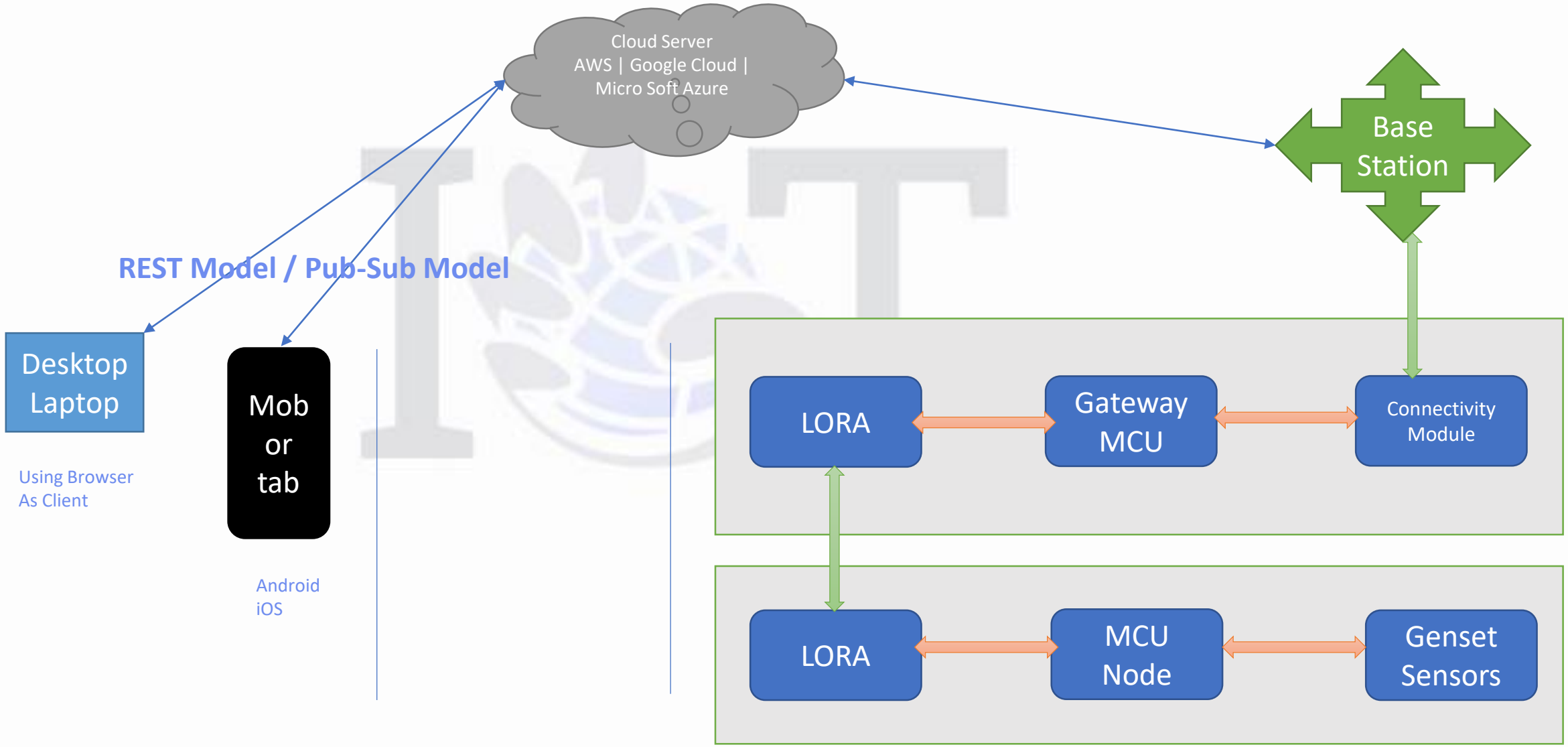
Architecture of IoT



Architecture of IoT



Architecture of Our Solution



Technical Architecture

Web Browser

IOT Hub

Client Tier

Apache Server

Python

ORM

json

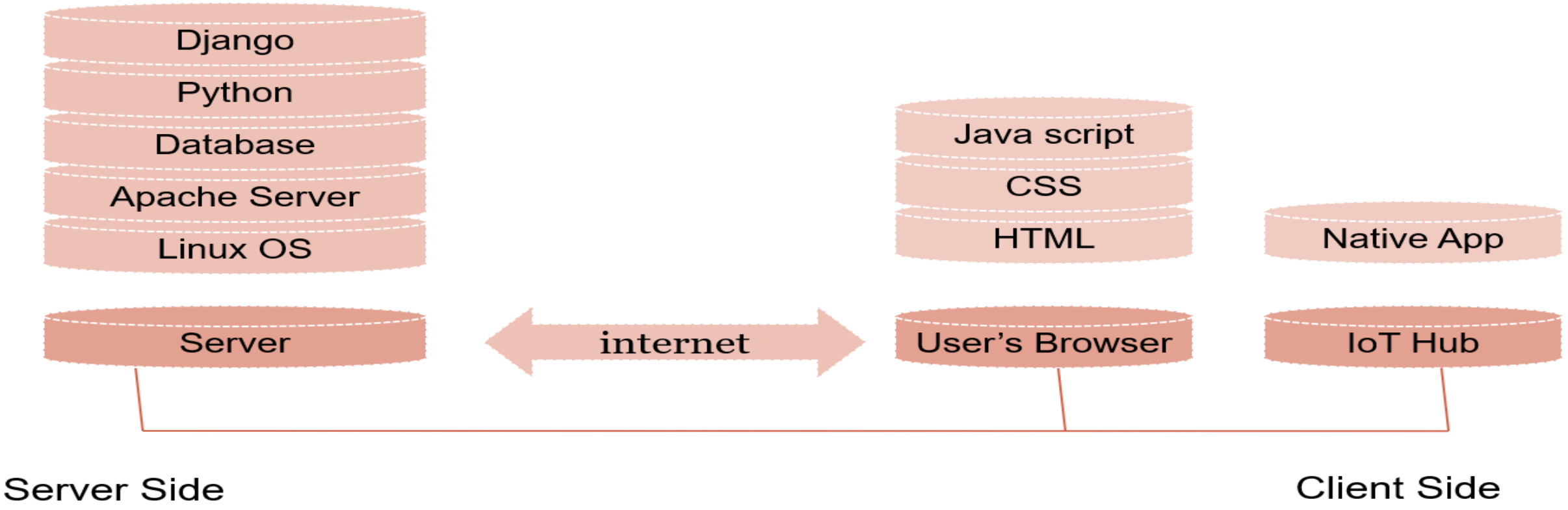
Business Logic Tier

Database

File System

Database Tier

Tech Stack



Code Walkthrough of IoT Solution

Machine Learning

- **Machine learning** is a field of computer science that gives computers the ability to learn without being explicitly programmed.

- It is closely related to computational statistics , which also focuses on prediction-making through the use of computers.

- It has strong ties to mathematical optimization, which delivers methods, theory and application domains to the field.

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1. Scope of Machine Learning
2. Scope of Machine Learning in IoT
3. Demo Of Machine Learning App
4. Design and Architecture of Machine Learning App
5. Code Walkthrough of end to end Solution

Scope of Machine Learning

- The companies such as Google, Quora, Facebook hire people who know machine learning.
- There is intensive research going on in machine learning in the top universities of the world.
- There is no upper limit to the salary of machine learning experts in the top companies.

Scope of Machine Learning in IoT

- According to ABI research analysis Edge analytics in IOT, the total volume of data produced annually by IOT-connected devices is estimated to reach almost 130 million YB (10^18 MB) in 2020.

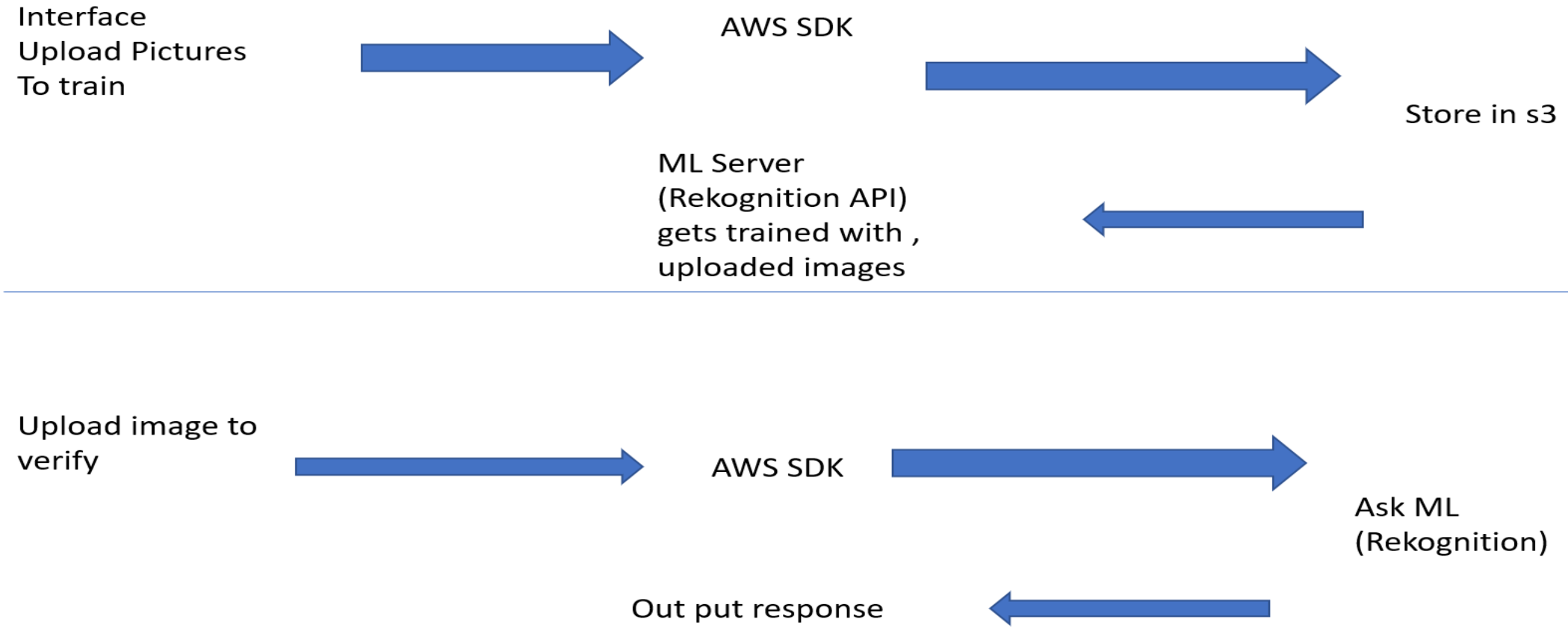
- The three terms IoT, AI, and ML will define the business for next 2-3 decades. The giant corporations like **Google, Facebook, and Amazon** have an edge in the business for the time being because of the massive database that they hold about their customers. Data is the new oil and IoT devices are the source of the oil.

Demonstration of Machine Learning Solution

Upload/Train : (name should be lower caps, without spaces and special characters)

http://54.161.242.187/recognize/

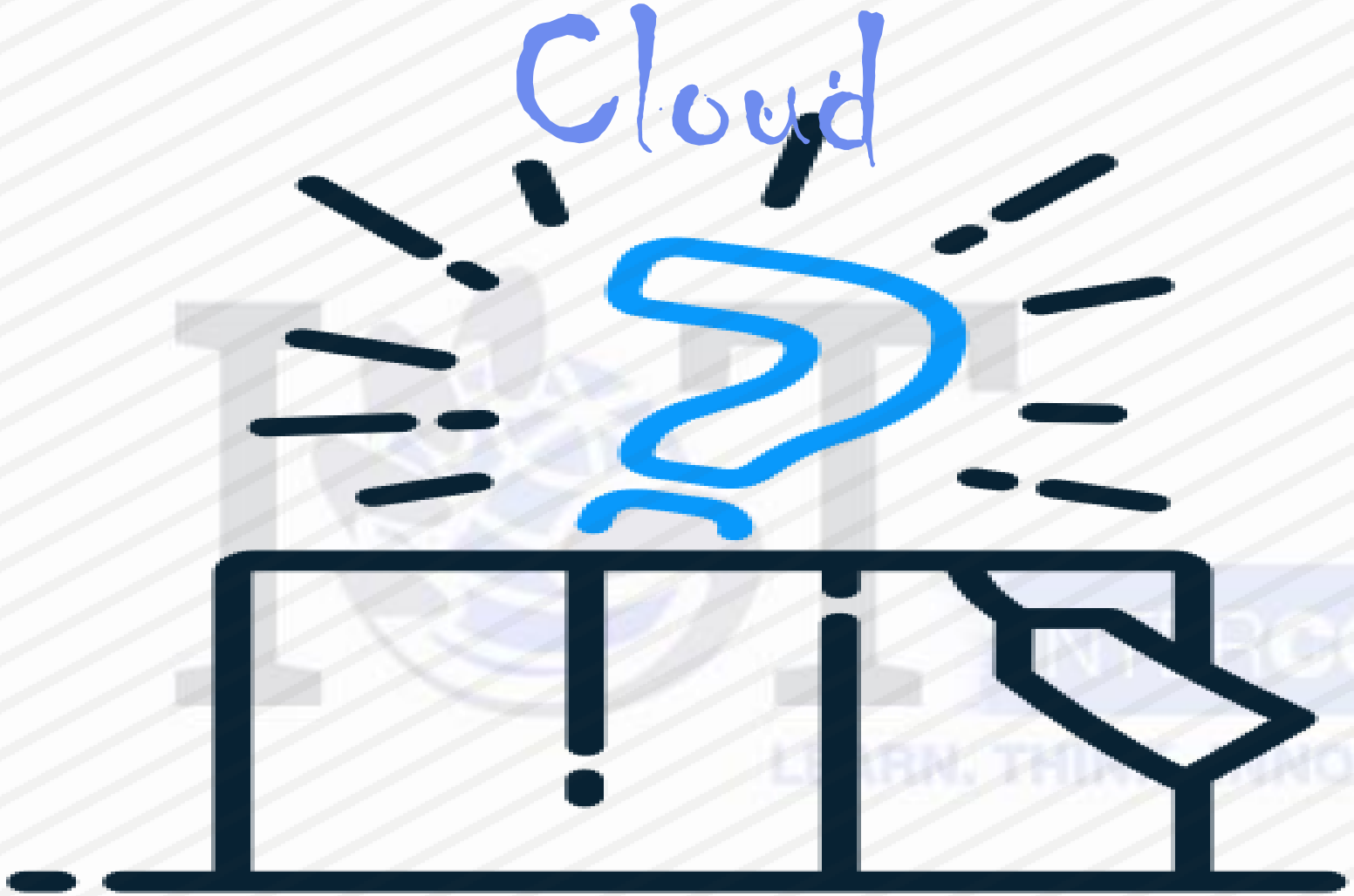
Architecture of Our Solution



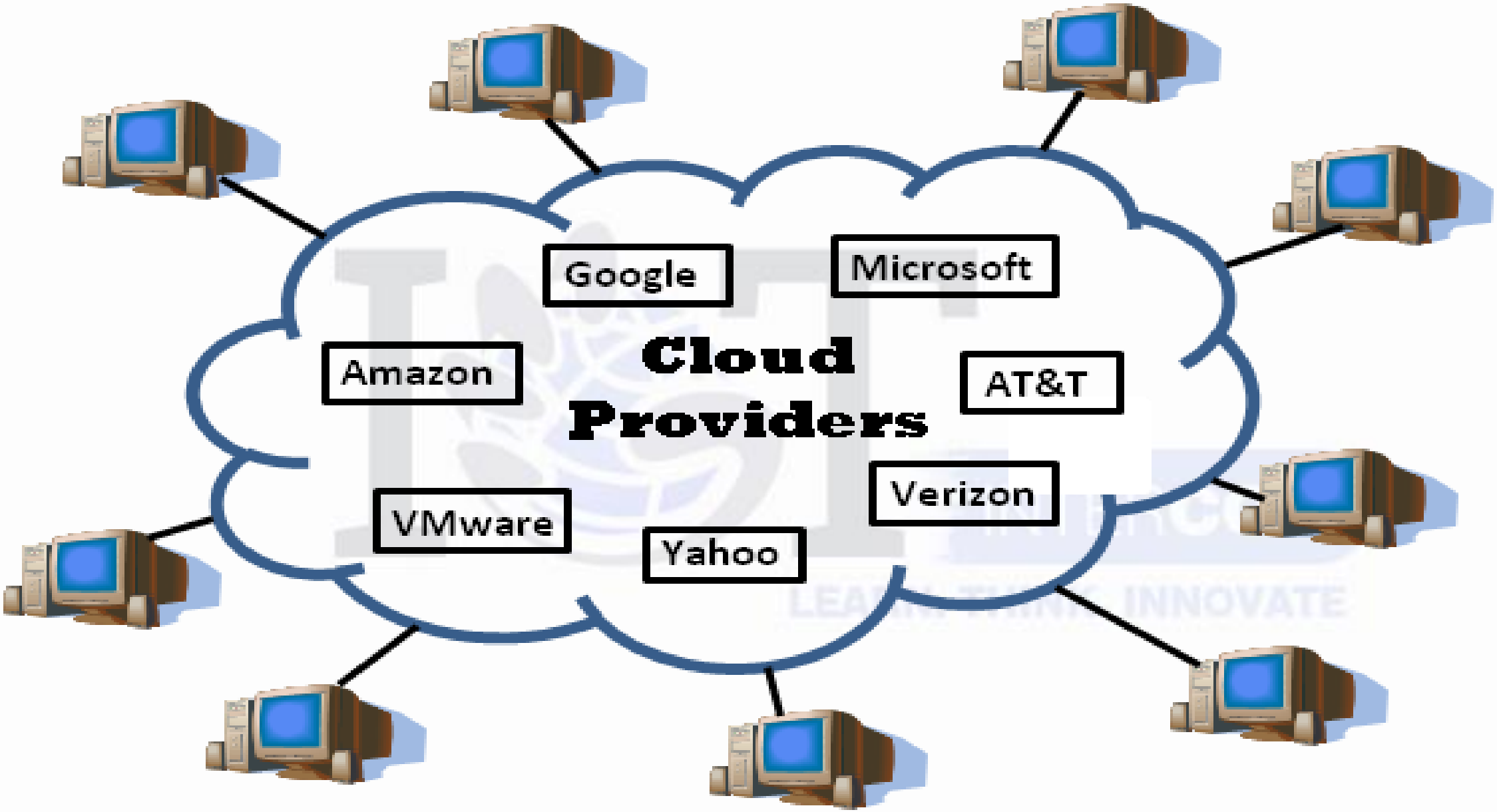
Types of Machine Learning

- Supervised Learning
- Semi-supervised Learning
- Active Learning
- Reinforcement Learning
- Unsupervised Learning

Code Walkthrough of ML Solution



“Cloud Computing is Internet-based computing, whereby shared resources, software, and information are provided to computers and other devices on demand, like the electricity grid”. (Wikipedia)



CONTENTS

1. Types of Cloud
2. Public Cloud
3. Private Cloud
4. Scope of OpenStack in cloud

Types of cloud

- **Infrastructure-as-a-Service (IaaS),** i.e. services like Amazon EC2 or google APIs for maps.
- **Software-as-a-Service (SaaS),** e.g. online file storage, drawing, office software
- **Platform-as-a-Service (PaaS),** e.g. portals like google apps that you may configure for your own organization.

Public cloud

Private cloud

Openstack Role in Cloud

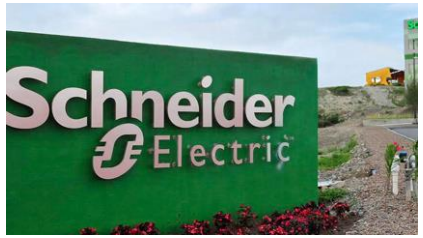
OpenStack (sometimes shorten as **O~S**) is a free and open-source software platform for cloud computing, mostly deployed as infrastructure-as-a-service (IaaS), whereby virtual servers and other resources are made available to customers. The software platform consists of interrelated components that control diverse, multi-vendor hardware pools of processing, storage, and networking resources throughout a data center. Users either manage it through a web-based dashboard, through command-line tools, or through RESTful web services.

https://www.openstack.org/

wipro

CYPRESS
EMBEDDED IN TOMORROW™

DigiMove
The Digital Movement



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DevOps Expert

Devendra
Linux driver developer

Sarasvati
Designer

Murari
Advisor

Amandeep
Cloud Developer

Bhavana
IoT Developer

Our Team

THANK YOU