# NIELIT, Gorakhpur

**Course Name: A-level (1st Sem.)** **Subject: IoT**

**Topic: IoT and Machine learning** **Date: 29.05.2020**

**Machine Learning**

ML is one of the critical components of AI, where a computer is programmed with the ability to improve its performance. In short, Machine Learning is all about analysing big data – the automatic extraction of information & using it to make predictions.

Netflix, Amazon, Google, and other E-Commerce platforms use it to bring semantic outcome. It is based on algorithms that analyse the user's purchasing history to predict their preference. Machine learning is gradually integrating into all verticals, through automation of physical labour, we are improving the connectivity and shaping the future of AI and the IoT.

**Industrial Internet of Things (IIoT)?**

The Industrial IoT or Industry 4.0 or the 4th industrial revolution are the terms generally used for IoT technology in a business setting. The concept is similar to the consumer IoT; to use wireless networks, a mix of sensors, big data and analytics to optimize industrial processes.

IoT devices provide information and analytics to connect the world of hardware devices and high-speed internet.

**We can separate the Industrial IoT into two main categories:**

- **Industrial IoT-** The Industrial IoT, connects devices and machines in sectors like healthcare, transportation, power generation, etc.
- **Commercial IoT**– Commercial IoT sits between industrial IoT and consumer and shares aspects of both.

**How IoT (Internet of Things) and Machine Learning affect our life?**

IoT and ML are improving the way we live and communicate in our lives. For instance, some headset easily responds to our brainwaves to control appliances and on the other hand, Alexa and Amazon's Echo enables the voice-activated control of your high-tech smart-house.

This amalgamation of IoT and Machine Learning is changing various industries and the relationships that companies have with their clients. Businesses can easily gather and transform data into valuable information with IoT.

IoT is also transforming business models by helping companies to move from concentrating on products & services to companies that give the best outcomes. By impacting organizations' business models, the blend of IoT-enabled devices & sensors with ML creates a collaborative world that aligns itself around results & innovation.

**Challenges- IoT and Machine Learning**

These days' enterprises are flooded with data that comes from IoT devices and is seeking AI to help manage the devices. It is tough to manage and extract crucial information from these systems than we might expect.

There are aspects to IoT like data storage, connectivity, security, app development, system integration, and even processes that are changing in this space. Another layer of complexity with the Internet of Things has to do with functionality level.

Critical challenges that companies face with IoT and ML are with the application, ease of access, and analysis of IoT data. If you have a set of data from varied sources, you can run some statistical analysis with that data. However, if you want to be proactive to predict events to take future actions, a business needs to learn how to use these technologies.

Many firms are turning to the main cloud platform providers — for instance, Google, Amazon, Microsoft, Alibaba Cloud, or IBM. These companies offer a range of services to store IoT data and prepare it for data analytics, plus to train and run machine-learning models. They also assist in creating graphs, dashboards, and other simple-to-grasp layouts to visualize the information these models generate. Overall, IoT and Machine Learning are combined to provide high visibility and control of the wide range of devices connected to the Internet.

**Solutions-How can we help you?**

Futurists say ML (Machine Learning) and the Internet of Things (IoT) will transform business profoundly than the digital and industrial revolutions combined.

Are there some kinds of risks? Yes, as with any new technology, we have to accept both the profit and risks that come with mainstream adoption. We can do this with the confidence only when these technologies are tested against several odds.

One of the innovative solutions for seamless operation flow is IoT testing. There will be several other types of testing which require to be considered to cover the comprehensive functionality of IoT devices.