

### LEARN MACHINE LEARNING

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## **Machine Learning Tutorial**

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Todayâ€<sup>™</sup>s Artificial Intelligence (AI) has far surpassed the hype of blockchain and quantum computing. The developers now take advantage of this in creating new Machine Learning models and to re-train the existing models for better performance and results. This tutorial will give an introduction to machine learning and its implementation in Artificial Intelligence.

#### **Audience**

This tutorial has been prepared for professionals aspiring to learn the complete picture of machine learning and artificial intelligence. This tutorial caters the learning needs of both the novice learners and experts, to help them understand the concepts and implementation of artificial intelligence.

# **Prerequisites**

The learners of this tutorial are expected to know the basics of Python programming. Besides, they need to have a solid understanding of computer programing and fundamentals.

If you are new to this arena, we suggest you pick up tutorials based on these concepts first, before you embark on with Machine Learning.

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## **Machine Learning - Introduction**

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Today's Artificial Intelligence (AI) has far surpassed the hype of blockchain and quantum computing. This is due to the fact that huge computing resources are easily available to the common man. The developers now take advantage of this in creating new Machine Learning models and to re-train the existing models for better performance and results. The easy availability of High Performance Computing (HPC) has resulted in a sudden increased demand for IT professionals having Machine Learning skills.

In this tutorial, you will learn in detail about â''

What is the crux of machine learning?

• What are the different types in machine learning?

- What are the different algorithms available for developing machine learning models?
- What tools are available for developing these models?
- What are the programming language choices?
- What platforms support development and deployment of Machine Learning applications?
- What IDEs (Integrated Development Environment) are available?
- How to quickly upgrade your skills in this important area?

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# Machine Learning - What Today's AI Can Do?

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When you tag a face in a Facebook photo, it is AI that is running behind the scenes and identifying faces in a picture. Face tagging is now omnipresent in several applications that display pictures with human faces. Why just human faces? There are several applications that detect objects such as cats, dogs, bottles, cars, etc. We have autonomous cars running on our roads that detect objects in real time to steer the car. When you travel, you use Google **Directions** to learn the real-time traffic situations and follow the best path suggested by Google at that point of time. This is yet another implementation of object detection technique in real time.

Let us consider the example of Google **Translate** application that we typically use while visiting foreign countries. Googleâ $\mathfrak{t}^{\text{m}}$ s online translator app on your mobile helps you communicate with the local people speaking a language that is foreign to you.

There are several applications of AI that we use practically today. In fact, each one of us use AI in many parts of our lives, even without our knowledge. Today $\hat{a} \in \mathbb{T}^M$  s AI can perform extremely complex jobs with a great accuracy and speed. Let us discuss an example of complex task to understand what capabilities are expected in an AI application that you would be developing today for your clients.

#### **Example**

We all use Google **Directions** during our trip anywhere in the city for a daily commute or even for inter-city travels. Google Directions application suggests the fastest path to our destination at that time instance. When we follow this path, we have observed that Google is almost 100% right in its suggestions and we save our valuable time on the trip.

You can imagine the complexity involved in developing this kind of application considering that there are multiple paths to your destination and the application has to judge the traffic situation in every possible path to give you a travel time estimate for each such path. Besides, consider the fact that Google Directions covers the entire globe. Undoubtedly, lots of AI and Machine Learning techniques are in-use under the hoods of such applications.

Considering the continuous demand for the development of such applications, you will now appreciate why there is a sudden demand for IT professionals with AI skills.

In our next chapter, we will learn what it takes to develop AI programs.

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