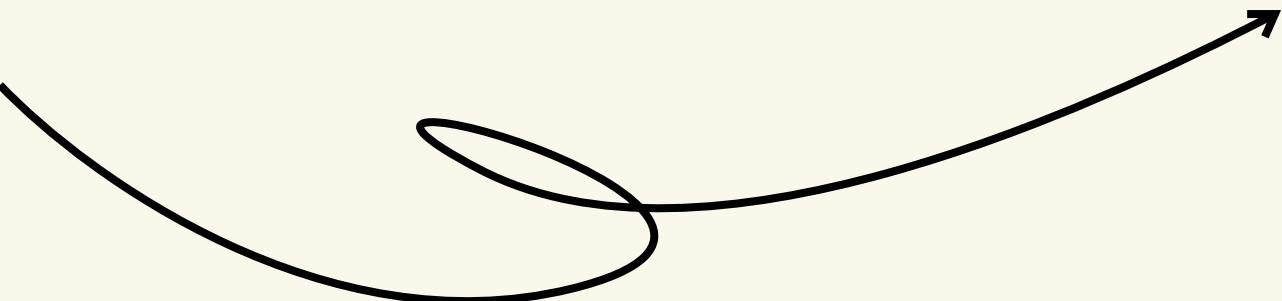


Machine Learning



Coding Club
IIT Guwahati



Machine Learning

Introduction

Machine Learning is the field of study that gives computers the capability to learn without being explicitly programmed. ML is one of the most exciting technologies that one would have ever come across. As it is evident from the name, it gives the computer that makes it more similar to humans: The ability to learn. Some basic tasks that you can do with machine learning include regression, classification, clustering and ranking.

Watch this [video](#) to get a brief overview of what machine learning is; and its types.

[Here](#) are some awesome real world applications of machine learning.

Ohh and do check out this awesome recent development in machine learning [here](#).

Ohk, so after watching this video, I believe you must have got an insight of the power of machine learning and its tremendous applications and you must be excited to learn the basics of how these function and eventually make your own models and do wonders :)

So, let's start from the very basics... we need to know the basics of 'Python'(the programming language)...



Coding Club
IIT Guwahati

Machine Learning

Why Python?

Umm.. because it provides many libraries which makes writing code easy, efficient and clean :)

Here are some useful resources for you to learn python

Note: If you have done taming python whatever covered till now then it is fine. If not, you can watch till the 9th video [here](#).

Now, when we know the basics of python(enough for our purpose), let's take a forward step and learn about an extensively used library in machine learning : Numpy

What is Numpy (Numerical Python) ?

As mentioned earlier, it is a python library which adds support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays, thus making our codes faster and cleaner, and our lives easier :)

As always it is a deep ocean to dive in, and therefore, here are some sorted resources for you to learn sufficient yet necessary numpy: [Part 1](#), [Part 2](#), [Part 3](#)



Coding Club
IIT Guwahati

Machine Learning

Done with numpy? Noice :)

Now, it's time to take another step forward and learn about another extensively used python library- 'Pandas' (not the cute little bears 😅). You'll love it :)

What is Pandas?

It is a python library(built upon numpy) that allows us to analyse and manipulate data stored in the form of tables(dataframes). For example, given a list of your classmates, you can directly figure out all the students with names starting with the letter 'a'.

Here are some really good resources to get you all covered with pandas xD : [Pandas \(Till video 13\)](#)

Okk, now we have played around with and analysed our data, but how do we represent our analysis? Here matplotlib comes to our rescue.

What is Matplotlib?

Matplotlib is a comprehensive library for creating static, animated, and interactive visualisations in Python. Matplotlib makes easy things easy and hard things possible. Concisely, it is a plotting tool.



Coding Club
IIT Guwahati

Machine Learning

Here are some helpful resources to help you master it (on a beginner level, because that's what we need for now :)

[Matplotlib Tutorial](#)

[Matplotlib Practice](#)

Congratulations !

You have now completed the base level requirements to get started with the first basic yet powerful machine learning module: Linear and Logistic regressions

Let's get through them one by one:

Linear Regression

Linear regression analysis is used to predict the value of a variable based on the value of another variable. The variable you want to predict is called the dependent variable. The variable you are using to predict the other variable's value is called the independent variable. It attempts to model the relationship between two variables by fitting a linear equation (= a straight line) to the observed data.

Here are some excellent resources for you to learn linear regression: [Linear Regression in Python](#)



Coding Club
IIT Guwahati

Logistic Regression

Logistic regression is one of the most popular Machine Learning algorithms, which comes under the Supervised Learning technique. It is used for predicting the categorical dependent variable using a given set of independent variables. An example of logistic regression could be applying machine learning to determine if a person is likely to be infected with COVID-19 or not.

Here are some excellent resources for you to learn logistic regression: [Logistic Regression in Python](#)

Congratulations again, you are now equipped with enough skills to solve the machine learning problem in the upcoming coding week :)

As always, if you have completed the above resources and want to learn more, here are some additional resources to satisfy you



Machine Learning

Additional Resources:

You can complete the rest of the videos of Pandas from the playlist.

[Linear Regression with Multiple Variables \(4.1-4.7\)](#)

[CS229 Probabilistic Interpretation Pages\(1-11\)](#)

[CS229 Probabilistic Interpretation Pages\(16-19\)](#)

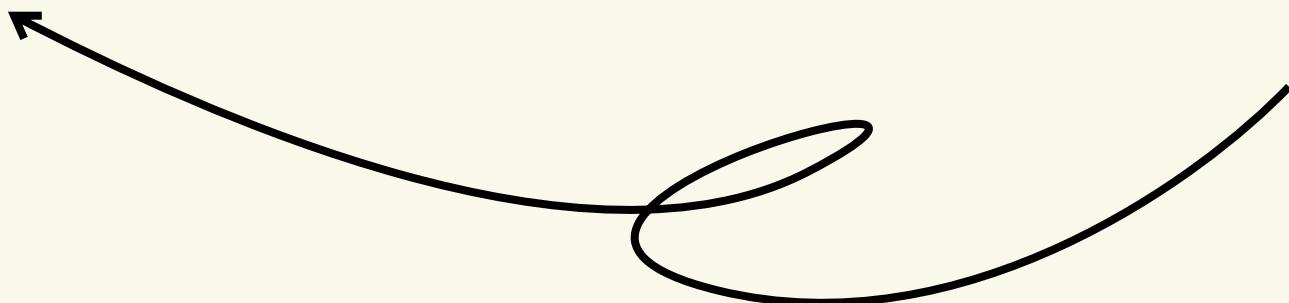
Thank you so much for being with us ❤️ and we believe that you must have enjoyed learning these basics in machine learning. Eagerly waiting to see your honest responses in coding week's assignments :)



Coding Club
IIT Guwahati

Machine Learning

Make sure to go through the material carefully
to ensure that you perform well in the task.



For more details :

Pranshu +91 9904754249

Mansi +91 9024174416



Coding Club
IIT Guwahati