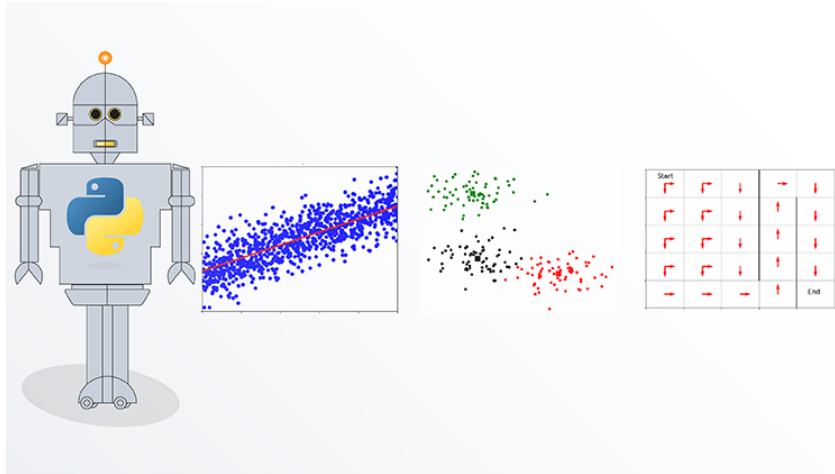


# Course: What is Machine Learning?

Useful Machine Learning Resources



## Chapter 1: Introduction

Wikipedia page for Machine Learning:

[https://en.wikipedia.org/wiki/Machine\\_learning](https://en.wikipedia.org/wiki/Machine_learning)

Course Github site:

<https://github.com/satishchandrareddy/WhatisML>

## Chapter 2: Supervised Learning

Wikipedia page for Supervised Learning:

[https://en.wikipedia.org/wiki/Supervised\\_learning](https://en.wikipedia.org/wiki/Supervised_learning)

MNIST Dataset:

<http://yann.lecun.com/exdb/mnist/>

Wikipedia page on artificial neural networks:

[https://en.wikipedia.org/wiki/Artificial\\_neural\\_network](https://en.wikipedia.org/wiki/Artificial_neural_network)

Udemy Course on Supervised Machine Learning by Instructor:

<https://www.udemy.com/course/introduction-to-machine-learning-using-python/?referralCode=72CB662946372360906C>

## Chapter 3: Unsupervised Learning

Wikipedia page for Unsupervised Learning:

[https://en.wikipedia.org/wiki/Unsupervised\\_learning](https://en.wikipedia.org/wiki/Unsupervised_learning)

Wikipedia page for cluster analysis:

[https://en.wikipedia.org/wiki/Cluster\\_analysis](https://en.wikipedia.org/wiki/Cluster_analysis)

Wikipedia page for Hierarchical Clustering:

[https://en.wikipedia.org/wiki/Hierarchical\\_clustering](https://en.wikipedia.org/wiki/Hierarchical_clustering)

Wikipedia page for K means clustering:

[https://en.wikipedia.org/wiki/K-means\\_clustering](https://en.wikipedia.org/wiki/K-means_clustering)

Wikipedia page for PCA:

[https://en.wikipedia.org/wiki/Principal\\_component\\_analysis](https://en.wikipedia.org/wiki/Principal_component_analysis)

## Chapter 4: Reinforcement Learning

Wikipedia page for Reinforcement Learning:

[https://en.wikipedia.org/wiki/Reinforcement\\_learning](https://en.wikipedia.org/wiki/Reinforcement_learning)

Good reference book:

Richard S. Sutton and Andrew G. Barton, “Reinforcement Learning: An Introduction”, 2<sup>nd</sup> edition, MIT Press, 2018.

Free online pdf version:

<http://www.andrew.cmu.edu/course/10-703/textbook/BartoSutton.pdf>

Wikipedia page for K bandit Problem

[https://en.wikipedia.org/wiki/Multi-armed\\_bandit](https://en.wikipedia.org/wiki/Multi-armed_bandit)

Wikipedia page Q Learning Algorithm Wikipedia page:

<https://en.wikipedia.org/wiki/Q-learning>

See also the Sutton and Barton book for details about the K bandit problem and Q Learning

Wikipedia page for AlphaZero

<https://en.wikipedia.org/wiki/AlphaZero>

Youtube movie about AlphaGo

<https://www.youtube.com/watch?v=WXuK6gekU1Y>

## Chapter 5: Python Demos

Website for Anaconda package which is a downloadable data science platform for Python:

<https://www.anaconda.com/>

Python website:

<https://www.python.org/>

Numpy, Matplotlib, and Pandas packages websites:

<https://numpy.org/>

<https://matplotlib.org/>

<https://pandas.pydata.org/>

Google Colab site:

<https://colab.research.google.com/notebooks/intro.ipynb>

Notebooks run in Google Colab that present the examples shown in course:

Linear Regression

[https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Supervised/notebook\\_supervised\\_regression\\_linear.ipynb](https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Supervised/notebook_supervised_regression_linear.ipynb)

Binary Classification

[https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Supervised/notebook\\_supervised\\_classification\\_binary.ipynb](https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Supervised/notebook_supervised_classification_binary.ipynb)

Multi-Class Classification

[https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Supervised/notebook\\_supervised\\_classification\\_multi.ipynb](https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Supervised/notebook_supervised_classification_multi.ipynb)

MNIST Classification

[https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Supervised/notebook\\_supervised\\_mnist.ipynb](https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Supervised/notebook_supervised_mnist.ipynb)

K Means Clustering

[https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Unsupervised/notebook\\_unsupervised\\_kmeans.ipynb](https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Unsupervised/notebook_unsupervised_kmeans.ipynb)

PCA

[https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Unsupervised/notebook\\_unsupervised\\_pca.ipynb](https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Unsupervised/notebook_unsupervised_pca.ipynb)

K Bandit

[https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Reinforcement/notebook\\_reinforcement\\_kbandit.ipynb](https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Reinforcement/notebook_reinforcement_kbandit.ipynb)

Maze

[https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Reinforcement/notebook\\_reinforcement\\_maze.ipynb](https://colab.research.google.com/github/satishchandrareddy/WhatIsML/blob/master/Code/Reinforcement/notebook_reinforcement_maze.ipynb)

## Chapter 6: Concluding Remarks

Course Resources:

<https://github.com/satishchandrareddy/WhatIsML>

Machine Learning Communities websites: Analytics Vidhya, Machine Learning Mastery, Medium, Towards Data Science:

<https://www.analyticsvidhya.com/>

<https://machinelearningmastery.com/>

<https://medium.com/topic/machine-learning>

<https://towardsdatascience.com/>

Machine Learning Frameworks:

[https://en.wikipedia.org/wiki/Comparison\\_of\\_deep-learning\\_software](https://en.wikipedia.org/wiki/Comparison_of_deep-learning_software)

Link rating machine learning frameworks

<https://www.edureka.co/blog/top-10-machine-learning-frameworks/>

Specific packages: scikit-learn, Tensorflow, Pytorch, Caffe

<https://scikit-learn.org/stable/>

<https://caffe.berkeleyvision.org/>

<https://pytorch.org/>

<https://www.tensorflow.org/>

Reinforcement Learning frameworks:

<https://keras-rl.readthedocs.io/en/latest/>

<https://opensource.google/projects/dopamine>

<https://tensorforce.readthedocs.io/en/latest/>

<https://openai.com/>

Data Sources:

Kaggle:

<https://www.kaggle.com/>

University of California, Irvine, Machine Learning Repository:

<https://archive.ics.uci.edu/ml/index.php>