

Machine Learning Roadmap



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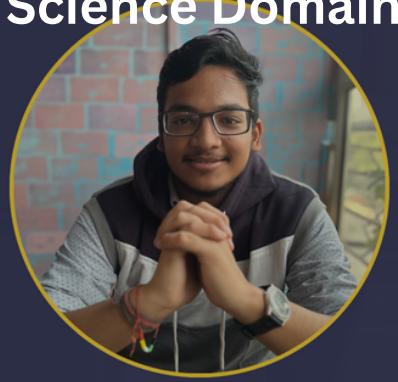
Kaggle 3X Expert

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5+ International certification in Data Science Domain

Open Source Contributor



WHAT IS MACHINE LEARNING

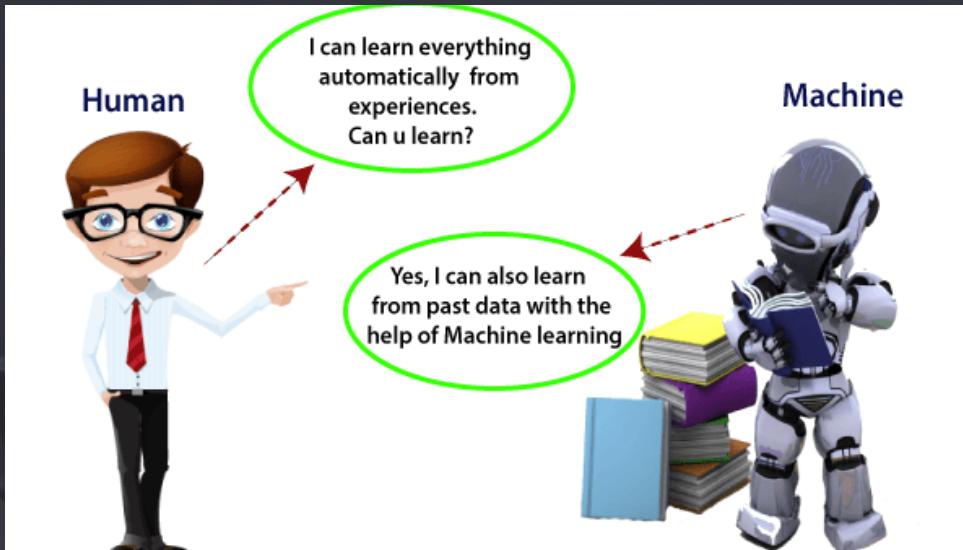
Machine learning is a branch of artificial intelligence (AI) and computer science which focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy.

NEXT

Machine learning is an important component of the growing field of data science. Through the use of statistical methods, algorithms are trained to make classifications or predictions, and to uncover key insights in data mining projects.

These insights subsequently drive decision making within applications and businesses, ideally impacting key growth metrics. As big data continues to expand and grow, the market demand for data scientists will increase. They will be required to help identify the most relevant business questions and the data to answer them.

NEXT



Machine learning enables a machine to automatically learn from data, improve performance from experiences, and predict things without being explicitly programmed.

NEXT

FEATURE OF MACHINE LEARNING

Features of Machine Learning:

- Machine learning uses data to detect various patterns in a given dataset.
- It can learn from past data and improve automatically.
- It is a data-driven technology.
- Machine learning is much similar to data mining as it also deals with the huge amount of the data.

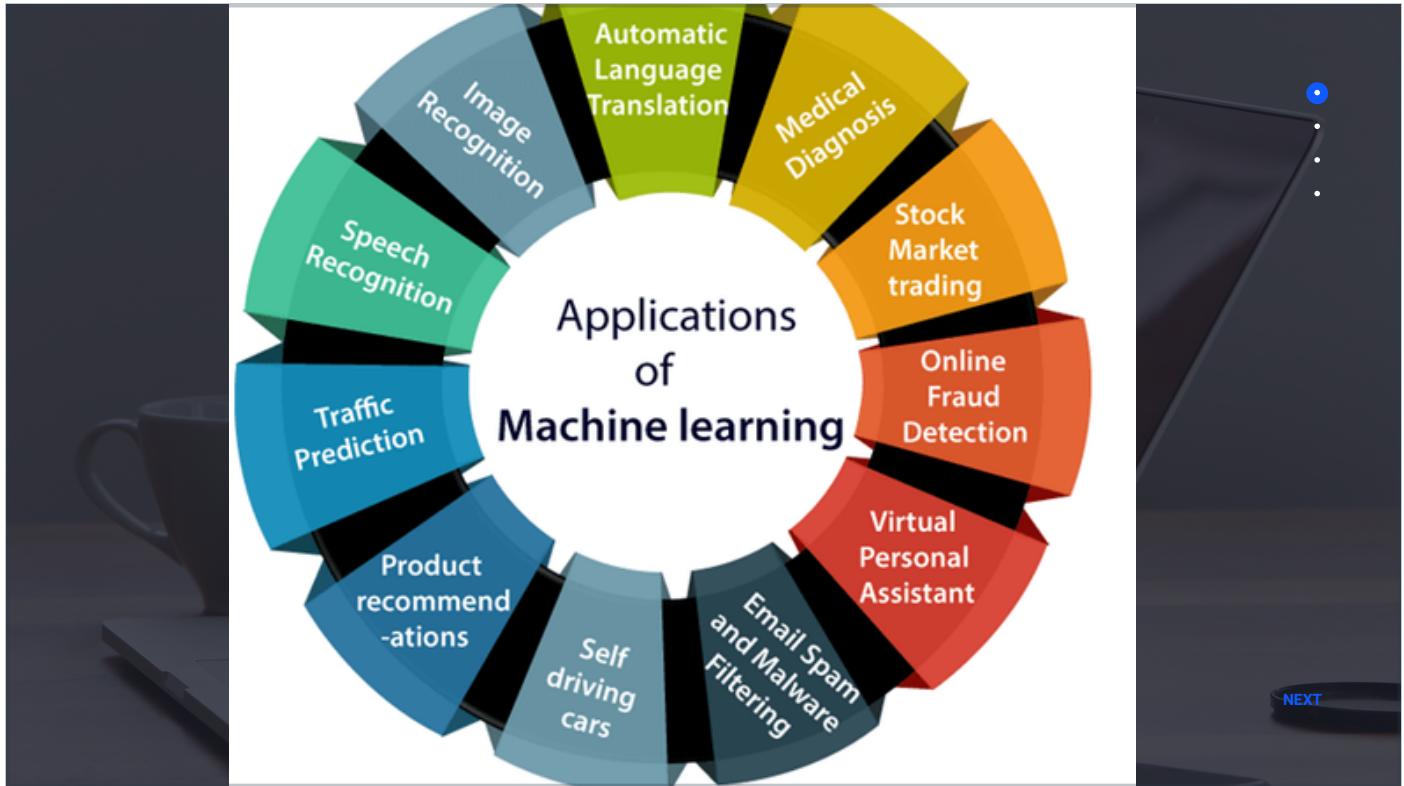
NEXT

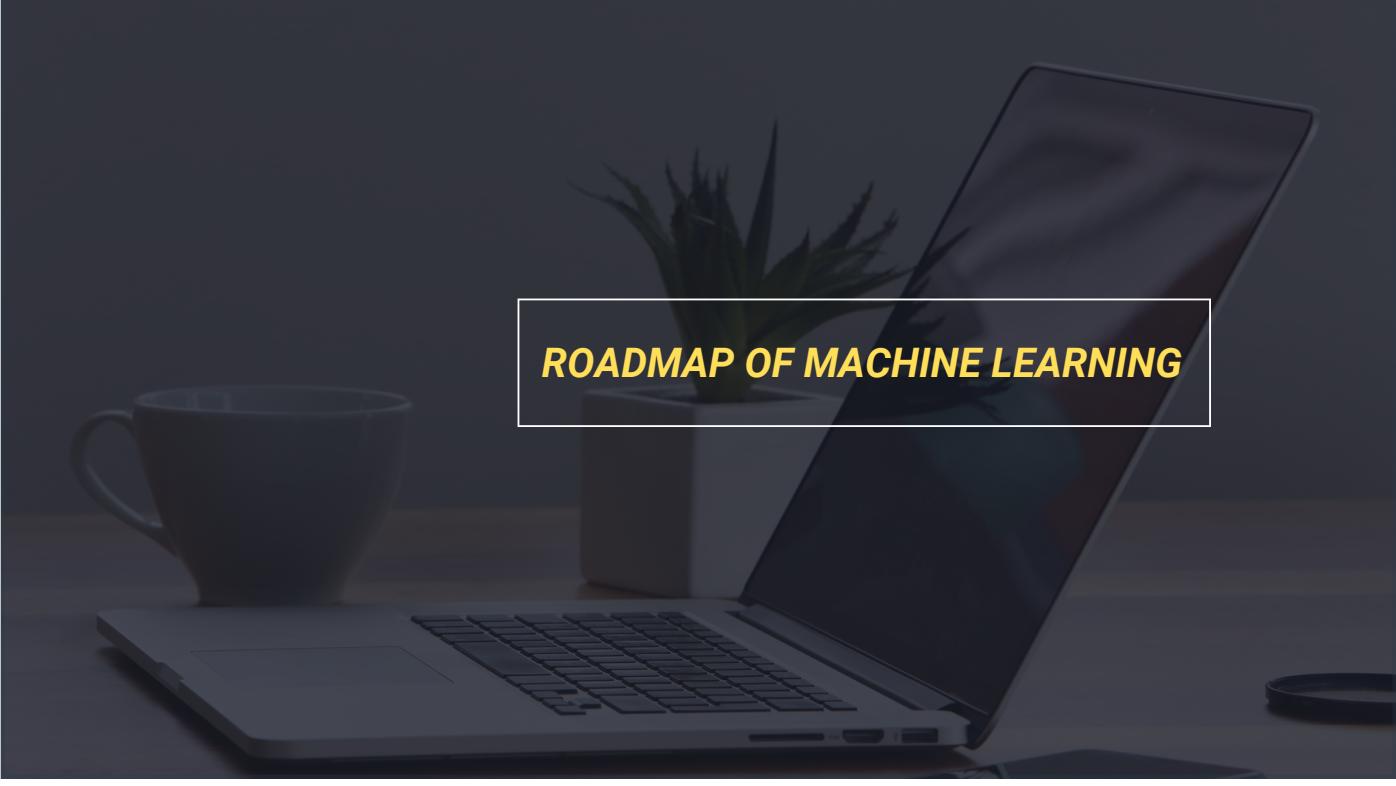
We can train machine learning algorithms by providing them the huge amount of data and let them explore the data, construct the models, and predict the required output automatically. The performance of the machine learning algorithm depends on the amount of data, and it can be determined by the cost function.

The importance of machine learning can be easily understood by its uses cases, Currently, machine learning is used in self-driving cars, cyber fraud detection, face recognition, and friend suggestion by Facebook, etc.

Various top companies such as Netflix and Amazon have build machine learning models that are using a vast amount of data to analyze the user interest and recommend product accordingly.

NEXT





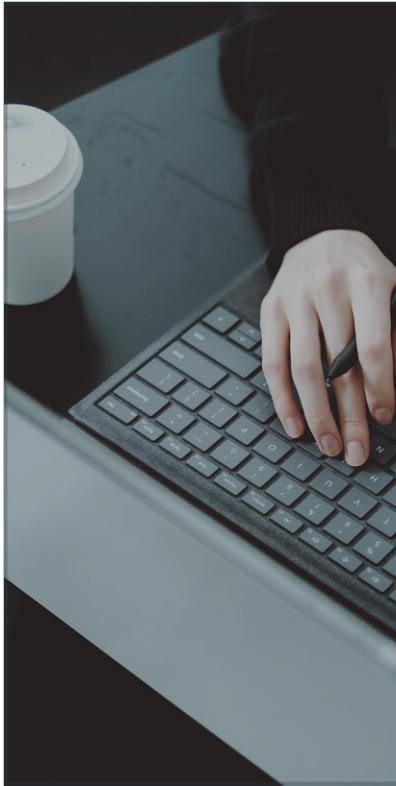
ROADMAP OF MACHINE LEARNING

1- PROGRAMMING LANGUAGE

PYTHON

R





EXPLORATORY DATA ANALYSIS



FEATURE ENGINEERING

- 1-EDA
- 2-HANDLING MISSING VALUE
- 3-HANDLING OUTLIER
- 4-CATEGORICAL ENCODING
- 5-NORMALIZATION AND STANDARDIZATION



FEATURE SELECTION

- 1-CORRELATION
- 2-FORWARD ELIMINATION
- 3-BACKWARD ELIMINATION
- 4-UNIVARIATE SELECTION
- 5-RANDOM FOREST IMPORTANCE
- 6-FEATURE SELECTION WITH DECISION TREE



MACHINE LEARNING ALGORITHM

REGRESSION
CLASSIFICATION
CLUSTERING



ALGORITHMS LIKE
*LINEAR REGRESSION, LOGISTIC
REGRESSION, DECISION TREE, RANDOM
FOREST, XGBOOST, KMEANS, DBSCAN*



HYPERPARAMETER TUNING

GRID SEARCH , RANDOMISED SEARCH, HYPEROPT, OPTUNA, GENETICS ALGORITHM



Model Deployments

To host your machine learning models with a powerful backend, you will need to learn frameworks like Django and Flask.

Docker and Kubernetes can be of great help if you want to ship and deploy your models quickly!

Streamlit is worthy of looking into if you wish to build custom web apps for machine learning and data science



Cloud Understanding-

AWS

AZURE

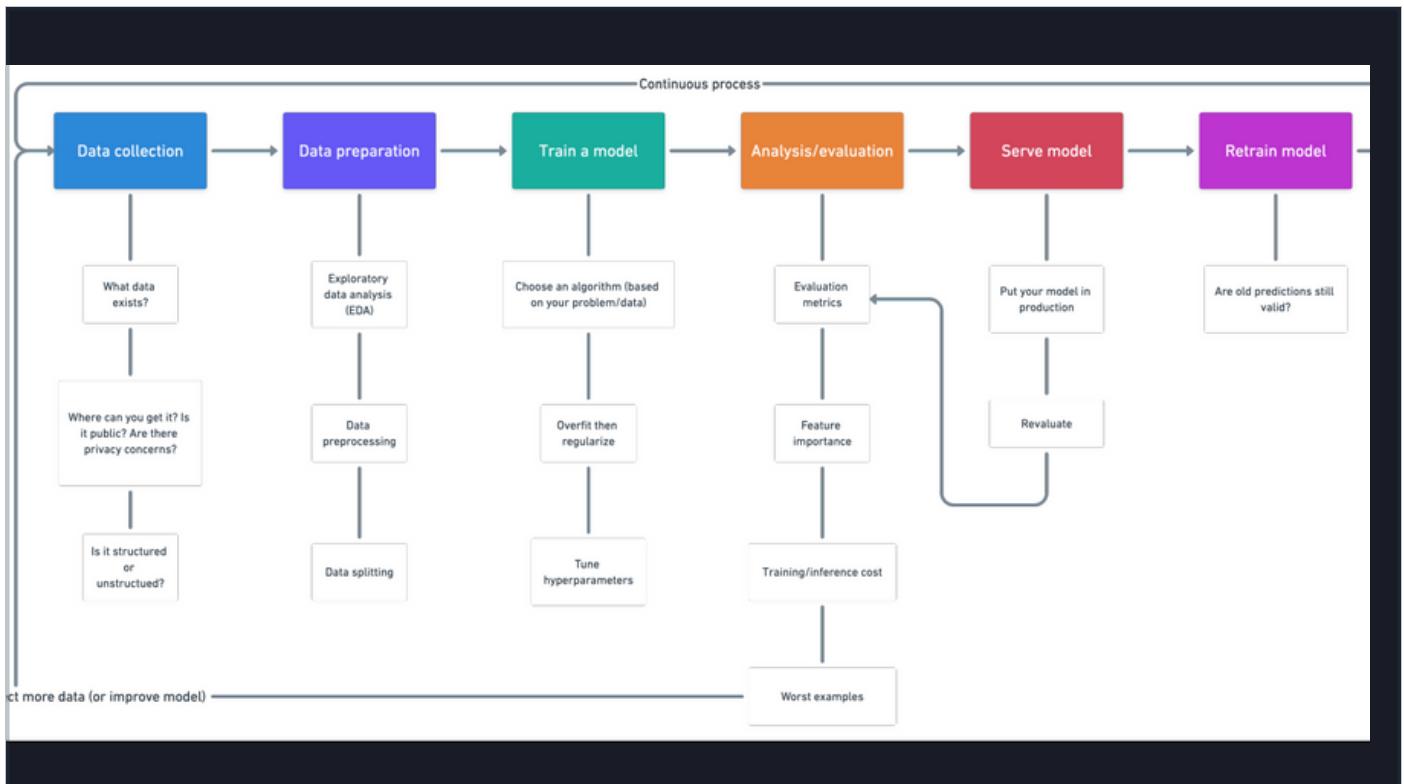
GCP

HEROKU



END TO END ML PROJECTS

- SOME BEGINNER ML PROJECT INCLUDES
- Iris Flowers Classification
- Stock Prices Predictor
- Predicting Wine Quality (Wine Quality Dataset)
- MNIST Handwritten Digit Classification
- Movie Recommender System
- Boston House Pricing Prediction Project
-



Frame work for ML

NUMPY

DASK

MATPLOTLIB

SEABORN

SCIPY

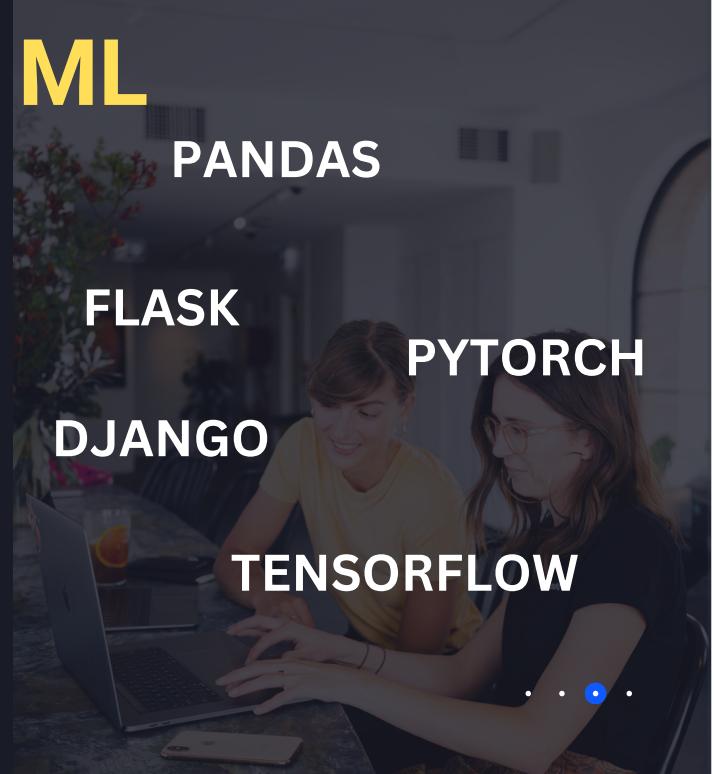
PANDAS

FLASK

DJANGO

PYTORCH

TENSORFLOW



FRAMEWORK FOR WEB DEVELOPMENT

WEB2PY

FLASK

TURBOGREEN

DJANGO

CHERRYPY



• Resources

Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems

[https://www.amazon.in/Hands-Machine-Learning-Scikit-Learn-Tensor/dp/9352139054/ref=sr_1_1?
crid=2ZIGJ7RDJBZYA&dchild=1&keywords=hands+on+ml+with+scikit+learn%2C+keras+and+tensorflow&qid=1611033246&sprefix=hands+on+ml%2Ccomputers%2C305&sr=8-1](https://www.amazon.in/Hands-Machine-Learning-Scikit-Learn-Tensor/dp/9352139054/ref=sr_1_1?crid=2ZIGJ7RDJBZYA&dchild=1&keywords=hands+on+ml+with+scikit+learn%2C+keras+and+tensorflow&qid=1611033246&sprefix=hands+on+ml%2Ccomputers%2C305&sr=8-1)

Machine Learning Crash Course

[https://developers.google.com/machine-
learning/crash-course](https://developers.google.com/machine-learning/crash-course)

NEXT

Machine Learning Resources

dbourke.link/mlcourse

Beginner (3-6 months+)



Machine Learning Concepts
(get your mind ready)



Learn within
Jupyter (or Colab)



Python



NumPy



pandas



learn

Part 1



Milestone project 1

Advanced (6-12 months+)



fast.ai Deep Learning
TensorFlow in Practice
for Coders (part 1)



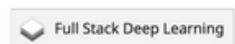
deeplearning.ai



fast.ai Deep Learning
from the foundations (part 2)



Deep Learning
Specialization



Milestone project 2 (deployed)



Part 2

Bonus (sprinkle in)

[./missing-semester \(+\)](#)

The missing part of your
CS degree

Choose one



AWS



Google Cloud



Microsoft Azure

[freeCodeCamp \(▲\)](#)

Web Development

[Khan Academy](#)

Math when needed



arXiv.org



Implement a paper



git

Version control

NEXT

Q/A SESSION





Thank you!

