Introduction To ML Circle LeanIn 2019-20

About Mentors

This course is going to be mentored by

Ambika CSE 3rd year

Anoushka Mahna Cse 4th Year

Kiran IT 3rd year

Introduction to Track

This circle aims at providing you all by the end of its duration:-

- The Applied Knowledge of ML and AI
- A basic understanding of the Intricacies of ML and AI algorithms
- Projects on ML and AI

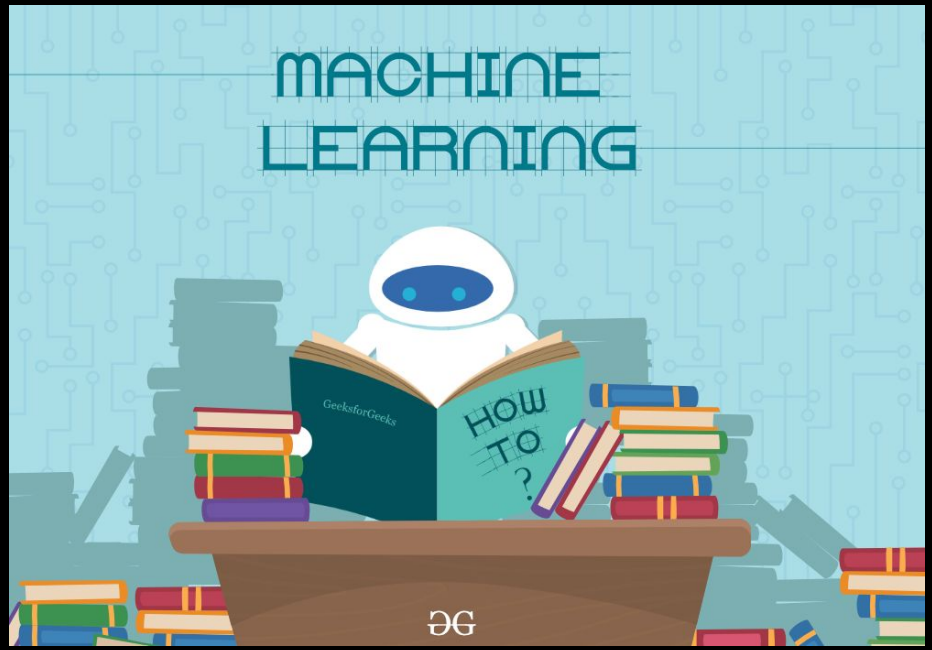
Requirements for the course

- Linux system
- Python
- Jupyter Notebook
- Basic Functional knowledge of python or any other programming Language

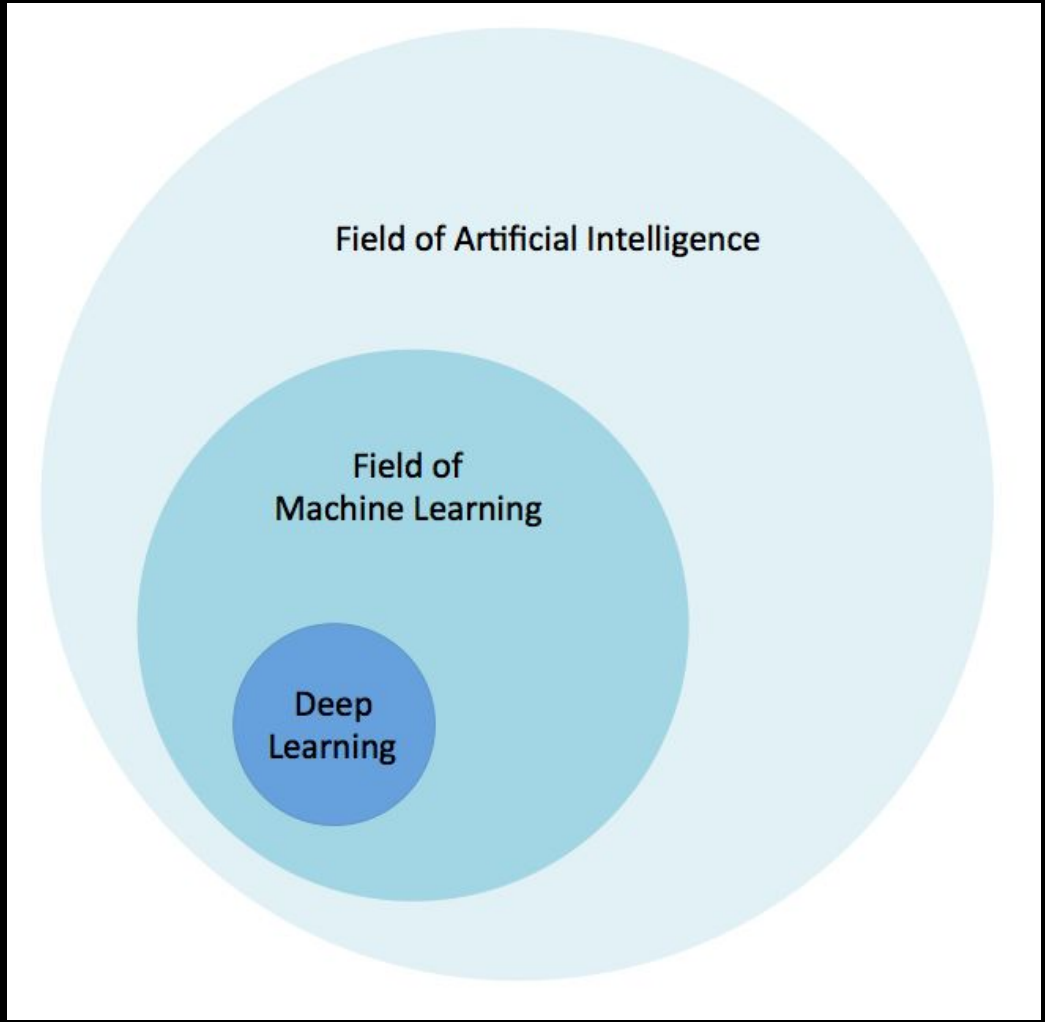
The Road Map for the first class

- Introduction to Course
- ML definition
- Introduction to Python
- Installation of Libraries.
- Installation of Jupyter
- Assignments

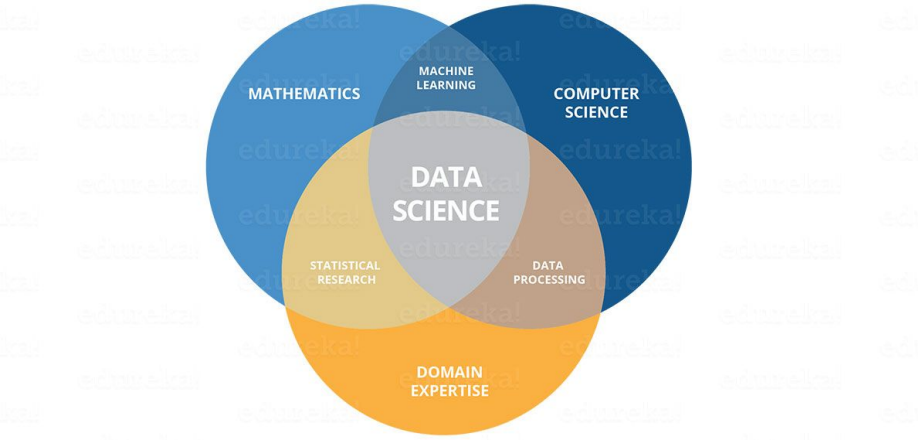
What is Machine Learning?



AI includes machine learning and deep learning.

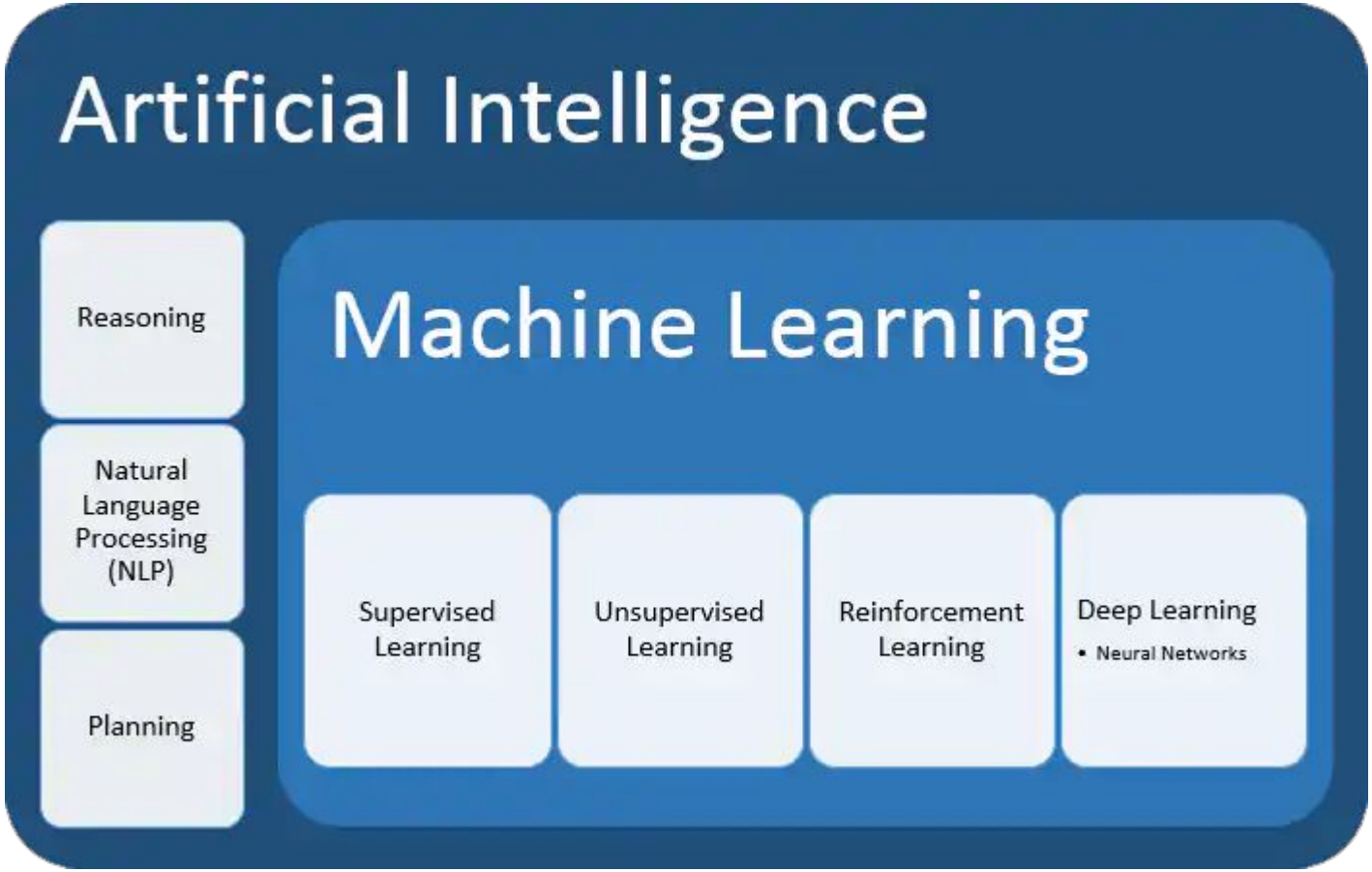


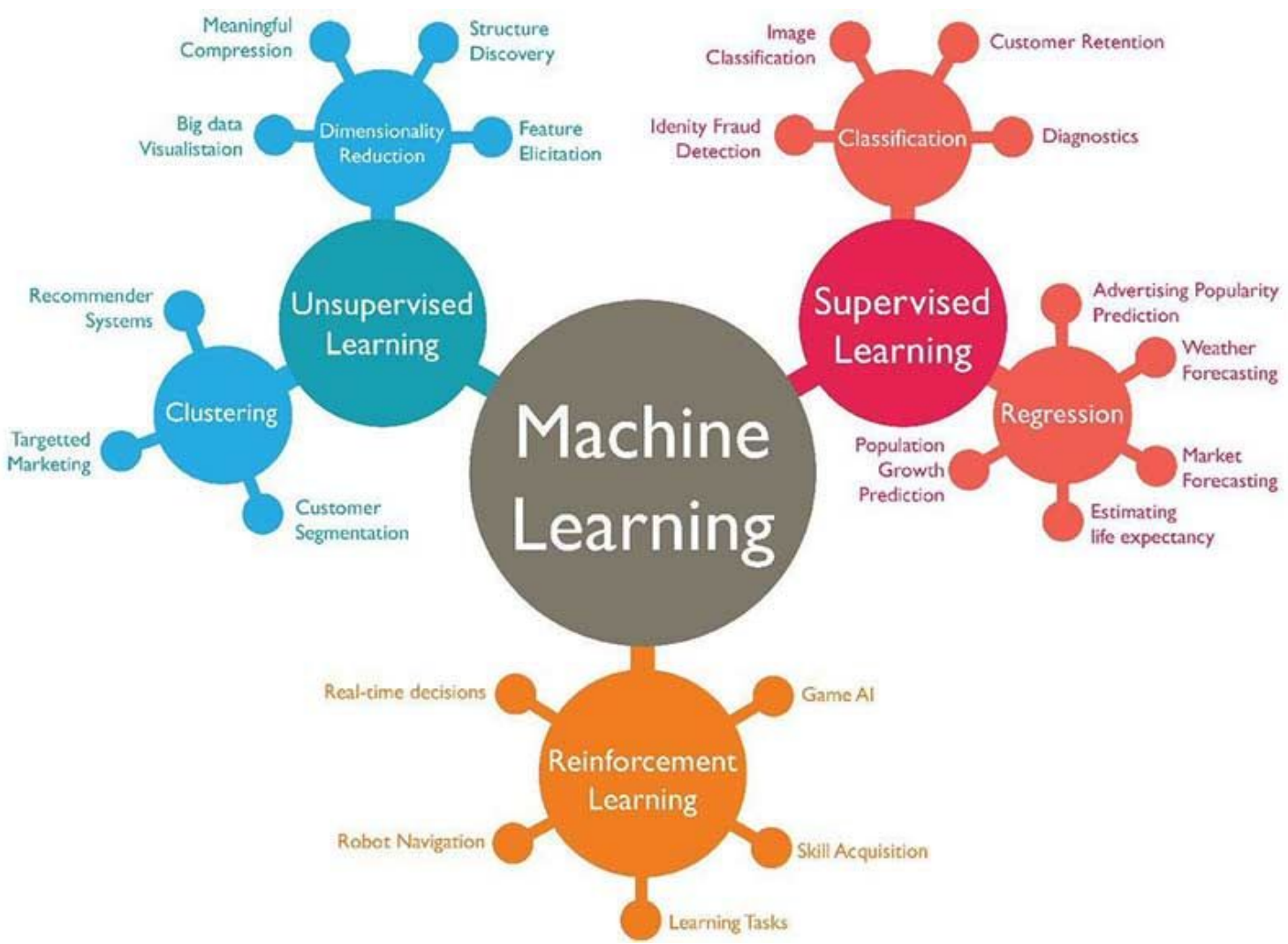
DATA SCIENCE



Machine Learning

Machine learning is an application of artificial intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. **Machine learning focuses on the development of computer programs** that can access data and use it learn for themselves.


Artificial Intelligence
Reasoning
Natural Language Processing (NLP)
Planning
Machine Learning
Supervised Learning
Unsupervised Learning
Reinforcement Learning
Deep Learning
• Neural Networks


Machine Learning
Unsupervised Learning
Dimensionality Reduction
Meaningful Compression
Structure Discovery
Big data Visualistaion
Feature Elicitation
Clustering
Recommender Systems
Targetted Marketing
Customer Segmentation
Supervised Learning
Classification
Image Classification
Customer Retention
Idenity Fraud Detection
Diagnostics
Regression
Advertising Popularity Prediction
Weather Forecasting
Population Growth Prediction
Market Forecasting
Estimating life expectancy
Reinforcement Learning
Real-time decisions
Game AI
Robot Navigation
Skill Acquisition
Learning Tasks

- **Supervised machine learning algorithms** can apply what has been learned in the past to new data using labeled examples to predict future events. Starting from the analysis of a known training dataset, the learning algorithm produces an inferred function to make predictions about the output values. The system is able to provide targets for any new input after sufficient training. The learning algorithm can also compare its output with the correct, intended output and find errors in order to modify the model accordingly.

- In contrast, **unsupervised machine learning algorithms** are used when the information used to train is neither classified nor labeled. Unsupervised learning studies how systems can infer a function to describe a hidden structure from unlabeled data. The system doesn’t figure out the right output, but it explores the data and can draw inferences from datasets to describe hidden structures from unlabeled data.

- **Semi-supervised machine learning algorithms** fall somewhere in between supervised and unsupervised learning, since they use both labeled and unlabeled data for training – typically a small amount of labeled data and a large amount of unlabeled data. The systems that use this method are able to considerably improve learning accuracy. Usually, semi-supervised learning is chosen when the acquired labeled data requires skilled and relevant resources in order to train it / learn from it. Otherwise, acquiring unlabeled data generally doesn’t require additional resources.

- **Reinforcement machine learning algorithms** is a learning method that interacts with its environment by producing actions and discovers errors or rewards. Trial and error search and delayed reward are the most relevant characteristics of reinforcement learning. This method allows machines and software agents to automatically determine the ideal behavior within a specific context in order to maximize its performance. Simple reward feedback is required for the agent to learn which action is best; this is known as the reinforcement signal.

Resources

1) Medium Digest blogs
2) Jason brownlee
3) 3 Blue 1 brown youtube channel
4) Andrew NG - Video lectures and notes
5) Coursera course
6) Coding Blocks Data Scientist and Machine Learning course

THANK YOU