

Introduction to Machine Learning

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- How the webpages are ranked
- Why the same type of videos or articles will pop up after searching for a certain topic. (YouTube, Facebook, Instagram ...)
- How auto-completion works (WhatsApp, Messenger ...)

Examples of Machine Learning Applications

- 1 Google Translate

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- 2 Siri

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- 2 Siri
- 3 Cortana

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- 5 self-Driving Cars
- 6 Email Classification

What is Artificial Intelligence or AI?

AI is about making computers able to perform the thinking tasks like humans and animal are capable of. for example **Machine Learning** , **Robotics** and **Game theory**.

What is Machine Learning or ML?

ML is a branch of Artificial Intelligence that **automates** the building of systems that learn iteratively from **data**, **identify patterns**, and **predict** future results with **minimum human intervention**.

What is the Difference between AI and ML?

- *Making decisions is based on programmable rules derived from theory*
- *Taking decisions is based on data*

What should we focus On? ML or AI

People use the terms AI and ML interchangeably these days, though we will use the term **Machine Learning** and we adopt the next definition:

Machine Learning is an interdisciplinary mix between statistics and computer science. It uses the historical data to learn and behave intelligently

Where DataScience (DS) resides?

Data science is about discovering and communicating insights from data. Machine learning is considered an important tool for data science.

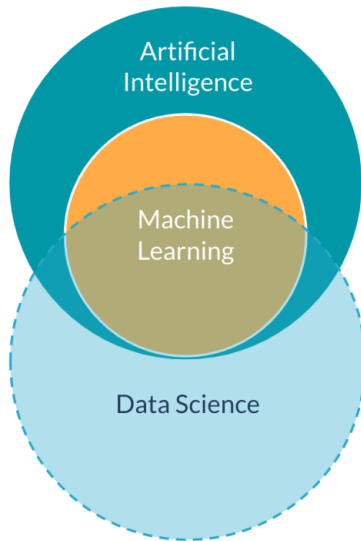


Figure 1: A Diagram Showing the Relationship between AI, ML and Data Science

Requirements to Learn Machine Learning

- 1 Statistical Background.
- 2 Mathematical Background (preferred but not required).
- 3 Domain Expertise.
- 4 Computer Skills: programming Languages such as (R, Python)

Types of Machine Learning

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- 2 Unsupervised Learning: a model without a dependent variable such as clustering, k-means

What is the difference between supervise learning and unsupervised Learning?

SuperVised Learning

1. Target: Available
2. Features: or Inputes
3. Examples: Linear Regression, Logistic regression, Regression Trees, KNN

UnSuperVised Learning

1. Target: Not Available or Unknown
2. Features: or Inputes
3. Examples: Anomaly Detection such as Fraud detection. Clustering, market segmentation, finding associations.

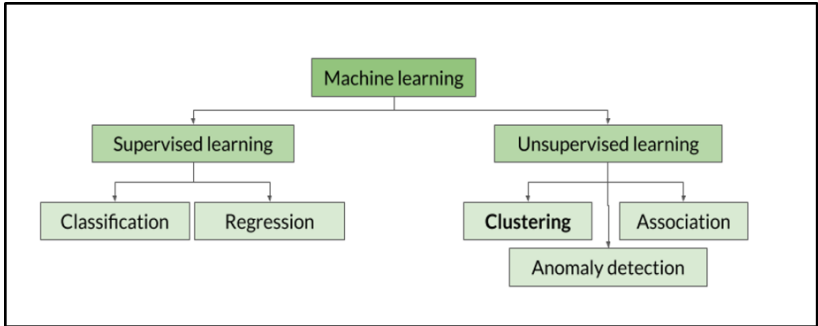


Figure 2: Machine Learning Hierarchy