Summary:

- Deep learning is one of the AI that is rising rapidly and driving a lot of this development is deep learning.
- The main objective of this course :
    o The foundation of neural network and deep learning.
    o How to build a neural network and how to train it on data.

- In the second course you will learn to improve about the practical aspect of deep learning.
- Problem types:
    o Regression.
    o Classification.
    o Clustering.

- Handcrafted features VS Learned Features.
- Training path VS testing path.
- Machine learning is :
    o Supervised
    o Reinforcement learning
    o Unsupervised
- The most popular classification algorithms types:
    o Linear classifiers
    o K-means
    o Support vector machine
    o Decision trees
    o Random forests
- Regression as a technique for determining the statistical relationship between two or more variables.
- Regression shapes:
    o Linear
    o Polynomial
    o Logistic
- Regression depends on type of dependent variable which is :
    o Continuous
    o Discrete
- Logistic regression loss function types:
    o Mean square error.
    o Mean absolute error.
- Cost function: is the average sum of loss function.
- Gradient decent: is am alternative optimization algorithm to find the minimum of the function.
    o Convex

- o Non convex
- Convex optimization can only have optimal solution which is globally optimal.
- Non convex optimization may have multiple locally optimal solution which is globally optimal points.
- Types of gradient decent:
  - o Batch Gradient decent.
  - o Stochastic Gradient decent.
  - o Mini batch Gradient decent.
- Vectorization
- Training set VS test set.
- Overfitting VS under fitting.