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What is ML? Day 3

" Field of study that gives computers the ability to learn without being explicity programmed "

— Arthur Samuel

Types of ML :

1. Supervised
   - Regression
   - classification

2. Unsupervised
   - clustering
   - Dimensionality Reduction
   - Anamoly Detection
   - Association Rule Learning

3. Semisupervised

4. Reinforcement

Day 4

Batch / Offline ML

Batch learning is a machine learning approach in which the model is trained on the entire dataset at once. The entire dataset is divided into fixed-size subsets called batches, and the model's parameters are updated after processing each batch.

The problem with Batch Learning

Once the model is trained it is deployed over the server, hence after a while it get out dated. Let take an example of spam classifier, where marketer's always try to find new ways for publicity of their product or service.

Disadvantages of Batch ML

1. Lots of Data
2. Hardware Limitation
3. Availability

~~Online Batch~~

Online Learning.   Day 5

Online learning also known as incremental learning or streaming learning, is a machine learning approach in which the model is continously updated as new data becomes available without the need to retrain on the entire dataset. This approach is particulary useful when dealing with large datasets that may not fit into memory all at once, when data arrives in a continuous stream or when the underlying data distribution is subject to change over.

When to use?

1. where there is a concept drift (stock)
2. Cost Effective
3. Faster solution

Learning Rate

It is hyperparameter that determines the step size at which the model's parameter are adjusted during the optimization process.

Disadvantage

1. Tricky to use
2. Risky

Batch Vs Online Learning

Features	Offline Learning	Online Learning
Complexity	Less complex as model is constant	Dynamic complexity as the model keeps evolving over time
Computat^n Power	Fewer computation, single batch based training	continuous data ingestions result in consequent model refinement comput^n
Inproduct^n	Easier to implement	Difficult to implement
Applicat^n	Image classifical^n, where data pattern remain constant	used in finance, economic where new data patterns are constantly emerging