LECTURE NOTES

Campus: PCE   Course: BTECH   Class/Section: IIIrd year CSE-C   Date: 21.01.21

Name of Faculty: Praveen kr. Yadav   Name of Subject: Machine Learning   Code: 6 CS4-02

Date (Prep.): 21.01.21   Date (Del.): 28-01-21   Unit No./Topic: L   Lect. No. 01

OBJECTIVE: To be written before taking the lecture (Pl. write in bullet points the main topics/concepts etc. which will be taught in this lecture)

Machine Learning

- overview
- why ML required.

IMPORTANT & RELEVANT QUESTIONS

1) what is machine learning?

2) why ML is required?

FEED BACK QUESTIONS (AFTER 20 MINUTES):

1) what are the difference between machine Learning Algo^n and Traditional Algo^n for a given problem.

OUTCOME OF THE DELIVERED LECTURE: To be written after taking the lecture (Pl. write in bullet points about students' feedback on this lecture, level of understanding of this lecture by students etc.)

- satisfactory.

REFERENCES: Text/Ref. Book with Page No. and relevant Internet Websites:

Hands on Machine Learning with scikit-Learn by Aurelian Geron.

Introduction to Machine Learning :- Machine Learning is the science of programming computers so they can learn from data.

Machine Learning is the field of study that gives computers the ability to learn without being explicitly programmed.

A computer program is said to learn from experience E with respect to Task T and some performance measure P, and the performance measure (P) improves with experience E.

eg- spam filter program that can learn to flag spam from some given examples of spam emails (Training set)

(each training eg is called as a Training instance (sample).

T - flag spam for emails

E - Training data

P - correctly classified email such as (Accuracy is one performance parameter.

why Machine Learning is required:-

- Traditional Programming for some problem is very complex beacuse so much rules (beacuse) they are very hard to maintain.)

- Traditional Programs may work on one dataset but fails for another dataset.

- Machine learning programs are much shorter, easier to maintain and most likely more accurate then Traditional ones.

If there is any update in spam detection then you need to update the entire algorithm in traditional Approach.
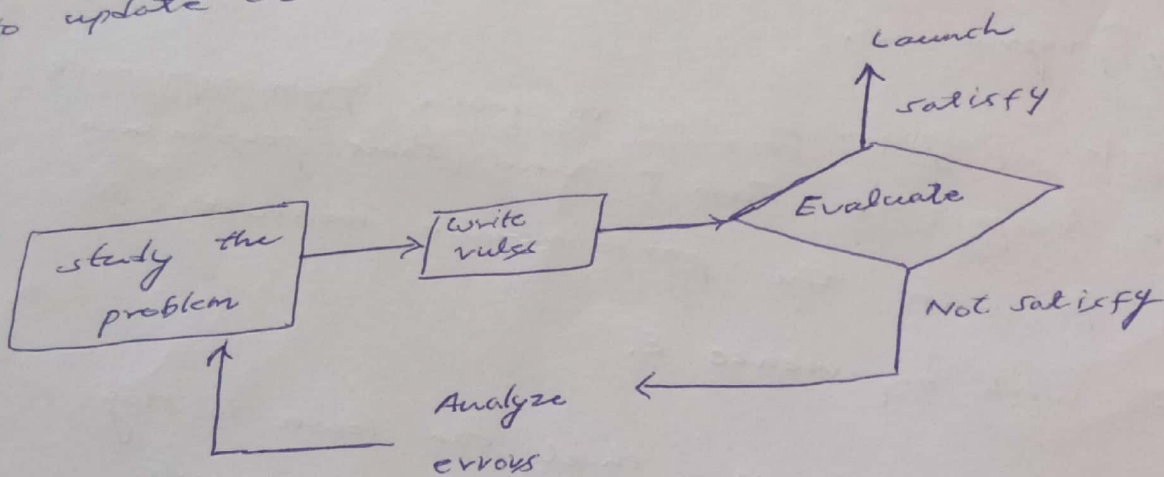
Traditional Approach
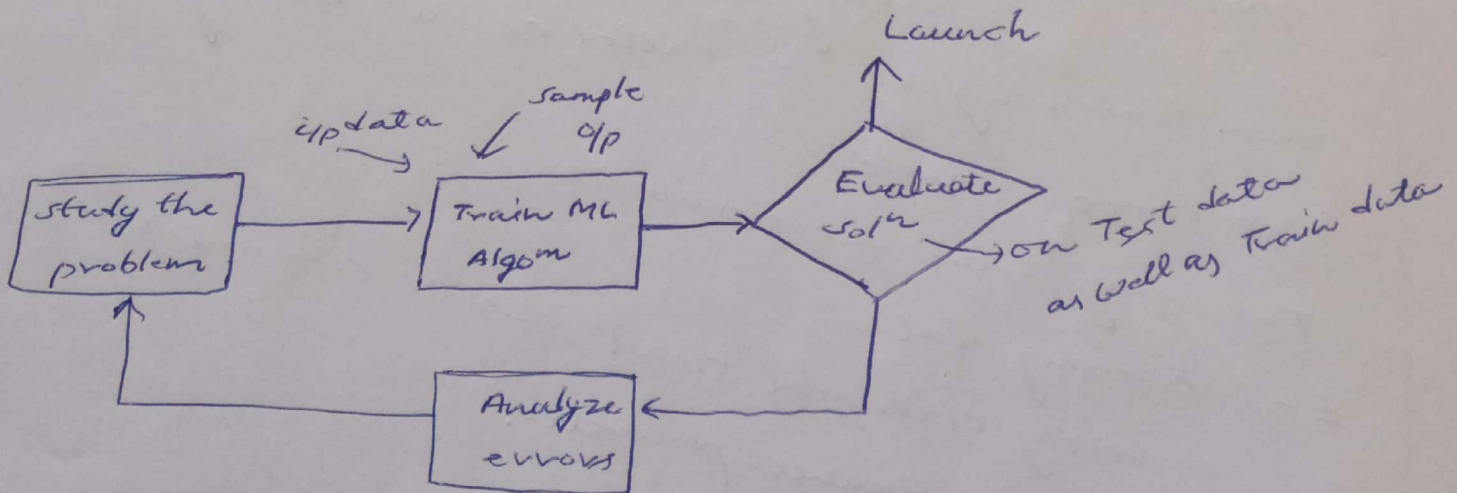
Machine Learning Approach.

Advantages of Machine Learning :-

1. Early identifies trends and pattern - Machine learning can review large volumes of data and discover specific trends and pattern that would not be apparant to human.

2. No Human intervention needed - (Automation) since in ML, giving machine the ability to learn, it lets them to make predictions and improve the algorithm on their own.

3. Continuous Improvement - They keep improving in accuracy and efficiency.
   - prediction and Accuracy is increases with the growing data.

4. Handling multidimensional and multivariety data.

5. Wide Application -

Disadvantages of Machine Learning :-

1. Data Acquistion - ML requires large dataset to Train, unbiased data and good quality data.

2. Time and Resources - ML needs enough time to cover all the algorithm to learn and develop, with considerable amount of accuracy and relevancy.

4. Interpretation of Result - Another challenge is to accurately interpret the result generated by these algorithms.

High error susceptibility - ML is autonomous but highly susceptions to errors.
- poor training dataset leads to biased prediction which is coming from a biased training.
- These errors must be unnoticed for long period of time