2. Data Science – Machine Learning – Terminology

Contents

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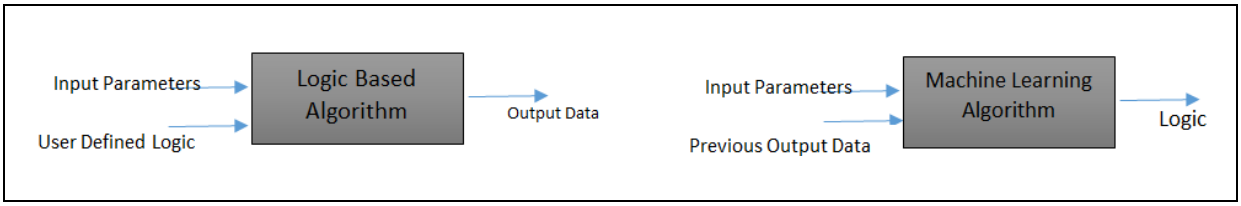
1. Machine learning

- ✓ Machine learning is a technique which enables computers to learn automatically from past data.
- ✓ Machine Learning is an approach to train the models.
- ✓ Machine learning is helpful to predict the future values.



2. Model

- ✓ In simple terms, a model is a representation of reality.
- ✓ A model is created to do a specific purpose

Example

- ✓ General example, a world map is a model for this physical world or universe.
  - The creator of world map have done deep analysis, understands, visualized with simple representation.

In terms of Machine learning,

- ✓ A model can be a,
  - A piece of code or program
  - A mathematical formula
  - A program + mathematical formula

3. Train

- ✓ We need to train the model

4. How to train?

- ✓ We need to use data to train the model

5. Model learns

- ✓ Model will learn pattern from data.

6. Pattern

- ✓ Patterns means a simple knowledge gained during training.
- ✓ So, model learnt patterns from data during training

7. Before trained

- ✓ Before training model, model doesn't know about the patterns.

8. After trained

- ✓ After training model, model knows about the patterns.

9. Test the model

- ✓ Once after model got trained then that model has to be tested to check the accuracy.
- ✓ If accuracy is good than the model works well

10. Model deployment

- ✓ Finally we need to deploy knowledge acquired by the model
- ✓ These models also called as model fit

11. Towards target value or classifier

- ✓ Models learnt patterns from data towards target value.
- ✓ So, let's try to understand what it means.

12. General example

- ✓ Assuming that one of my friend is introducing his friend as
  - His name is Prasad working in X Company and having 3 years of experience.
- ✓ When I heard about his experience I can guess/predict his salary (target value).
- ✓ So, out brain is already trained to guess some attributes from past data(old friends)
- ✓ So, we have patterns towards to target value

13. Smart application

- ✓ Once accuracy satisfied then we need to deploy the model.
- ✓ Once model deployed then that application will become as smart application

14. Normal application

- ✓ Assuming that we have created an application by using Java/dotnet/Python.
- ✓ It's just called as normal software application because this application is just works on instruction based.
- ✓ Instruct based means,
    - If x value is greater than y value, then prints x value
    - If x value is less than y value, then prints y value

Make a note

- ✓ Normal application cannot think like human to take decisions
- ✓ Normal applications cannot take own decisions

15. Smart application

- ✓ A smart application is an application which thinks like a human to take the decisions.
- ✓ Smart application is intelligence based.

16. Use case

- ✓ Whenever you send email automatically Gmail application is predicting weather it is a spam or not spam.
- ✓ That means Gmail application is well trained and captures the patterns about mail type like,
  - Spam mail
  - Promotion mail
  - Social media mail & etc
- ✓ So, Gmail application knows patterns about to recognize the type of mail.

17. Accuracy testing

- ✓ Before deploying the model, it needs to be tested in lot of dimensions.
- ✓ If model is getting good predictions then we need to deploy.

Process in machine learning

- ✓ We need to train the model.
- ✓ During training model acquires the knowledge.
- ✓ This knowledge is called as model fit
- ✓ Once after model fit produced we need to test to check the accuracy.
- ✓ If satisfied with accuracy then we need to deploy the model

Data is important

- ✓ We need to train the model with data
- ✓ During this training model will go through the data and understand the patterns about data.
- ✓ These patterns helps to predict the result on new data