LECTURE NOTES

Campus: PCE Course: BTECH Class/Section: IV Sem - C Date: 22-01-21

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

Date (Prep.): 22-01-21 Date (Del.): 1-02-21 Unit No./Topic: 1 Lect. No: 02

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)

Types of Machine Learning.

IMPORTANT & RELEVANT QUESTIONS:

1. what is Labeled data in ML?
2. what is unlabeled data in ML?

FEED BACK QUESTIONS (AFTER 20 MINUTES):

1. what is ML?
2. what is supervised Learning in ML

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.)

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

Hands on Machine Learning, Aurelien Geron.

Types of Machine Learning :- There are three types of machine Learning.

- Supervised Learning.
- Unsupervised Learning.
- Reinforcement Learning.

(There are different ways to train machine learning algorithms based on what kind of data they ingest in order to learn from them. (labeled data and unlabeled data).

- Labeled data has both the input and output parameters in a completely m/c readable format, but that will require a lot of human efforts to prepare the label data. ~~and unlabeled data~~ (additional info about the data)

eg- whether a photo contains a horse or cow.

what type of action performed in a video.

Unlabeled data - is a pieces of data that have not been tagged with labels for identifying characteristics.

- eg - set of images without identifiers like people, cars

- So, unlabeled data is basically raw data that has not been annotated by human experts.

- Mostly used in unsupervised learning.

Differences between Labeled Vs Unlabeled data:-

Labeled DATA	UNLABELED DATA
1. Used in supervised machine Learning.	1. Used in unsupervised machine Learning.
2. Needs human / expert to annotate.	2. obtained by observing.
3 Expensive, hard and Time consuming to get and store	3. comparatively easy to get and store.
4. often used for complex predicting tasks.	4. often used to preprocess datasets.

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Machine Learning Models :-

Supervised Machine Learning :- In supervised learning, the training data that you feed to the algorithm includes the desired soln (called labels).

eg- SPAM Filter - It is trained with many example emails along with their class (spam or not spam), and it must learn how to classify new emails.

- predicating a target numeric value, such as the price of car.
- K-Nearest Neighbour Algorithm.
- Linear Regression
- Logistic "
- Support Vector Machines.
- Decision Trees

- Random Forests
- Neural Networks.

- In supervised learning having input data and output variables which means that the data is annotated and there is also a prediction goal.

11>. Unsupervised Machine Learning:- is a machine learning algorithm that works with datasets without labeled responses.

- eg grouping customers by their purchasing habits.
- Here system tries to learn without a teacher.

- clustering
  - K-means
  - DBSCAN
  - HCA
- Visualization and dimensionality reduction.
- Association rule learning.

12. Semisupervised Learning- some algo can deal with partially labeled training data, usually a lot of unlabeled data as well as labeled data.

eg. google photos.

iv>. Reinforcement Learning:- Reinforcement learning has no data at all, only the environment and an agent with a goal.

- A set of punishments and rewards are used to guide the agent to desired outcome.

- eg: google deepmind - chess engine.