**Weekly report of lessons**

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**The week**: 10th August 2021 to 13th August 2021

**The topics covered**:

- Different types of Machine Learning : Supervised Learning, Unsupervised Learning, Reinforcement Learning, Deep Learning
- Concept Learning: Task, Experience and Performance Measure
- Representation of Hypothesis
- Hypothesis Space
- Inductive Learning Hypothesis
- Ordering on Hypothesis
- Learning as a search problem
- Find-S Algorithm

**Summary topic wise**:

- Supervised Learning : Learning with labeled Data
- Unsupervised Learning: Learning with unlabelled Data
- Reinforcement Learning: Actions generating rewards
- Concept Learning: Inferring a Boolean-valued function from training examples of its input and output.
- Task: given the conditions predicting the output.
- Experience: Positive/Negative examples of target function.
- Performance Measure: how well the hypothesis does on the training examples.
- Representation of hypothesis: A hypothesis is a conjunction of constraints where each constraint is a Boolean condition on attribute values and is represented in the form of a vector.
- Hypothesis Space: It is the set of all possible hypothesis from which the machine learning algorithm will find the best one which fits the training examples well.
- Inductive Learning Hypothesis: Any hypothesis found to approximate the training function well over a sufficiently large set of training examples will also approximate the target function well over other unobserved examples.
- Ordering on hypothesis: A type of lattice diagram is drawn where the more general hypothesis is in the bottom and more specific hypothesis is in the top of the diagram.
- Learning as a search problem: Searching for a hypothesis in the hypothesis space to best fit the training examples.
- Find-S Algorithm: This algorithm finds a maximally specific hypothesis under several assumptions. It starts with the most specific hypothesis and then for all of the positive training examples it fine tunes the hypothesis to fit this example. There are many cons of this algorithm which are that it does not take into account any of the negative examples and simply picks up the maximally specific hypothesis.

**Concepts challenging to comprehend**:

Hypothesis Space and Ordering on Hypothesis are little challenging to understand.

**Interesting and exciting concepts**:

Different types of Machine Learning Algorithms and their applications is quite interesting and exciting.

**Concepts not understood**:

After going through the book and the video lectures the concepts are clearly understood.

**Any novel idea of yours out of the lessons**:

Concept Based Learning could be used to handle variety of decisions made in day to day life according to the conditions given so as to purely take decision logically without any emotional involvement.