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Assignment_1

Machine Learning is training computers, to obtain experience about the model and relationship between different data, that would help them analyze other data and infer accurate knowledge about it, without explicit given knowledge.

In Machine Learning, the data itself is the most important thing in data analysis, we can't train any model without it, thus more time is taken to gather and clean data than train the machine. Once the raw data is collected, recognizing its pattern is vital, it enables algorithms to understand the regularities and similarities in large amount of data and categorize them, then data users would be able to decide what important thing could be learned from the data. Learning pattern leads to predict outcomes, predictions need to beat some predetermined standard results, this can be maintained by implementing measurement techniques to evaluate accuracy and performance of the algorithms.

Machine learning can be considered as a subfield of Artificial intelligence that pushes frontiers of what computers could do which made machines execute tasks.

One example of modern machine learning applications is fraud detection, increased online transactions through different payment options are vast to be programmed explicitly for each case, but machine learning algorithms can find patterns quickly. Second example is face recognizer; we can't encode rules for identifying faces in photos? Because we don't know the exact rules, we process in our mind to recognize a face, thus it would not be possible to encode rules. However, we can train computers to recognize key edges and regions of photos that are likely to be faces.

We can't learn without data in machine learning, moreover machine learning grew out of statistics and probability and other fields. Data have names. Observation is a name given to each row in a tabular data set, it's a sample data. It's used to identify each data, the more observations we have the more the machine learns. Each column is called feature, an individual, measurable characteristics of a phenomenon, they are used as input to a system to make predictions, so the quality of the features impacts the quality of the prediction. Quantitative data is a feature which is numeric, it relies on objectivity and measurement, it quantifies a problem, and answers questions like what, how many and how often. whereas qualitative data is a feature which takes on a finite set of values, it's also called categorical data, it gives insights into the why and how of things, for example it gives information about the structure of images.

Machine learning is interesting for me because it analyzes data in a manner that human beings can't do it, it drives an immense meaning from a data, automatically detects each feature's data type whether it's categorical, numerical etc., performs basic statistical analysis like the mean, median, standard deviation, and more on each feature, well collected and

analyzed data is essential in the progress and development of human beings. I would like to learn machine learning, how it applies in different scenarios, with different learning types, supervised, unsupervised, reinforcement etc. I also must spend significant time to read and practice the class notes and other resources, that I would have a good understanding of it which ultimately, I would be able to use it in my carrier.