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Machine Learning

Machine learning teaches a computer to view data and be able to recognize patterns so that future predictions can be made as well as analyze the data and get more useful information rather than just seeing the raw data. Makes raw data into something useful, being able to recognize patterns lets the computer make predictions for future data or be able to fill in missing data with better accuracy.

Machine Learning and Artificial Intelligence go hand in hand because the machine learning code needs to be able to think for itself to some degree in order to recognize patterns from the data fed to it. It would be really hard to code every type of pattern in data therefore machine learning needs to be able to teach computers to think and recognize patterns in data by itself. Similar to how humans are able to look at data and eventually find a pattern from it a computer needs to be able to think and since it is able to go through data much faster than a human it can recognize patterns much quicker.

An example of Machine Learning is facial recognition. A computer is able to see a picture of someone and recognize who it is from previous data given to it. It is able to examine facial features and pair it with the corresponding person. A traditional program would be unable to do this since it is unable to think therefore the best you could get if you fed it the exact picture that was already in the data set given to the program, which would not be facial recognition rather just matching pictures. Another example is search engines such as google, they are able to pull up thousands of results in seconds that have to do with what the user searched. A traditional program would have a lot of trouble doing the same since it would most likely try and search for those exact words or have a database with words that are similar to said words and try it that way but this may not always result in the most relevant data. Furthermore, Google is able to predict what you are going to type or ask next depending on what you are typing and what you have previously looked up.

The data fed to the computer is put in as tables most of the time. Each row is a data point or observation. Meaning that is data that was all examined at one point, like if we are analyzing temperatures a data point/ observation would include the date, time , temperature , condensation and wind speed etc. for that one observation, this would create a row. A Feature would be what was observed so in our previous example it would be the date, time temperature etc. Therefore an observation is the actual data while a feature describes what the data represents. Data can be quantitative, meaning they are numbers that has a wide range or it can be qualitative data meaning it is a classification only having a fixed set of values it can take, while it could also be a number it is usually used to classify the data for example grades are quantitative it could be a 80, 96, 89.1 etc and grade level is qualitative because you can be grade level 5 or 4 but these numbers are used to classify the students. These are important for machine learning because it takes all these into account and studies them in order to learn to predict future values.

Machine learning interests me because I want to learn more about computers and how they work and machine learning plays a big part in the most interesting parts of technology. I would

like to learn more about machine learning in case i ever have the need to implement it in a project or work environment.