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What is Machine Learning?

 If you have been paying attention to any tech news in 2018, you have probably heard of machine learning. Without knowing it, you probably use machine learning on a daily basis. From listening to one of your Spotify “Daily Mixes” to calling an Uber for your afternoon class in Center City, machine learning is everywhere. So, what exactly is it? What is this technology behind Spotify’s auto curated playlists and Ubers estimated arrival times?

 Machine learning is behind the facial recognition software used by Facebook and the recommendations made by Amazon. Machine learning is a category of artificial intelligence. It allows the computer or machine to learn from experiences and make accurate predictions. There are three main categories of machine learning: Supervised learning, Unsupervised learning, and Reinforcement learning. All of these forms of machine learning use specialized algorithms in order to arrive at their conclusions.

 Supervised learning makes up the majority of machine learning. Supervised learning is a form of machine learning where the answer to the question is known. An example of this is image recognition. A prediction model would be given pictures of different fruits such as apples, oranges, and bananas. After seeing the images, when given different images of fruit, the algorithm would predict what fruit it is based on the training images it was given. There are two main areas where machine learning is most effective. These are classification problems and regression problems. Classification problems ask the algorithm to put the data into categories where regression problems look for numeric values. Some algorithms used with supervised learning include linear regression, random forest algorithms, and support vector machines.

 Unsupervised learning is for questions that data scientists don’t have the answer to. Unsupervised learning uses neural networks to find any patterns or structure in the data. An example of this would be giving a prediction model a bunch of pictures of different people. The model would try to find similarities in pictures and group them by the similarities. This form of machine learning would use clustering, association rules, and many other kinds of algorithms.

 The third form of machine learning is reinforcement learning. This form of machine learning sounds like what it is. In this form, agents attempt to figure out the best way to complete a task. As the agent gets closer, it receives a reward in order to keep it on the path to success. This form is often used for robots trying to complete a certain task. It can also be used for getting an agent to complete a certain level on a video game.

 While you might not have realized it, machine learning is everywhere. From Spotify to Uber, every major company is using machine learning these days. The use of machine learning will only increase in the near future and the demand for data scientists will increase as well. Machine learning will improve the efficiency of many tasks and will also improve the way many companies function.

Sources

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