Research Assignment
09.29.2023

For this week's research assignment, I indulged myself in an intricate side of my career path that I took heavy interest in; artificial intelligence. The article covered machine learning, and had every necessary bit of information in order for a viewer to be considered knowledgable of machine learning.

Like the previous assignment, I will begin with an explanation of the information I received, as I feel as if the best way to test comprehension of a subject is to explain the course to an audience. In the most broad of terms, machine learning can simply be defined as the methodology of creating capabilities for machines to imitate the intelligence of humans. Such methodology can come in the analysis of media through a visual scene, understanding the input of text language, or performing an action in the real world. Arthur Samuel, a pioneer of the term machine learning, described it as machines being able to output material without the necessary input of programming.

Hinted before, the operation of machine learning would not be possible if it werent for the data it needed. Such data can come in forms of numbers, photos, text, media, or even receipts of an online store: all sharing the common theme of supplying a machine learning model to train itself and make predictions based on the data. This data can be separated into training and testing data, as self explanatory as it is, one set of data is used to train the AI on the task at hand, while the other set is merely supposed to test the success of the model. These models can be divided upon three different classifications: descriptive (system uses data to explain what happened), predictive (system makes a prediction based on data), and prescriptive (system will make suggestions on what to do when prompted). Besides these types of models, the actual categories and types of machine learning can be divided into three categories similarly: Supervised machines (Models are trained on data sets, allowing them to grow over time), unsupervised machines (A model that looks for patterns in unlabeled data), and reinforcement machines (Model that uses a reward system to train machines to make the best action).

Now that the basics are understood, the subject of machine learning can then be directed into multiple sub categories, some of them being natural processing languages (Machines learn to understand natural language spoken and written by humans: Such is incorporated in chatbots and even Siri and Alexa), Neural networks (A “neural network” where inputs are processes and outputs are produced that circulate through different “nodes” in order to cultivate a response to a prompt such as “*Is there a cat in the image?*”), and deep learning, which is a neural network with multiple layers.

Artificial intelligence is a rising and controversial topic in not only today's media, but real life where it is integrated into almost every facet of soceity. It is important as a computer interested student that I keep up to date with everything that revolves around artificial intelligence as it would benefit the production of an application or the networking between me and other interested students and adults. This greatly affects my understanding; as I will now be more knowledgable on the topic when I bring it up to my mentor when discussing my draft-end of year project. Although many questions were answered, and the amount of knowledge I retained is beneficial, I still find myself pondering on Neural networks and deep learning, which I plan to go into for my next research related assignment.

Annotations