Machine Learning

Machine learning in essence is the scientific method of data analysis by computers. It refers to the collection, identification and interpretations of meaningful patterns in data sets without explicit pre- programming. Most dictionaries define learning as the acquisition of knowledge, understanding or skills through various means such as study, instruction, or experiences. An alternative definition of learning through the psychological perspective is 'the relative permanent change in behaviour as a result of experience'. Understanding the definition of learning is fundamental to understanding machine learning and how this process takes place.

Machines learn via inputs and external information that cause changes within it's program, data, structure or overall system. When such changes have occurred it can be said that the machine has learnt. Algorithms are used to facilitate machine learning, they are representative of the 'experience' portion of learning. As with humans and other species alike, the process of learning begins with an experience, the algorithms represent the experience and are used to develop expertise. This acquired expertise is represented through outputs which are the performed tasks.

Upon learning of this recent technology one may question it's purpose and why it even exists. It's development was prompted by the complexity of programming. If there is already a fixed program written for a function to take place then there is no adaptability of the program to its users. The program would be unable to improve its outcomes based on experiences. Most programs are used by different people and their input pattern may change according to the individual's requirements. Thus machine learning is the best solution to adaptable programming and improved predictions, decisions and performance.

There are three broad categories of machine learning systems. Supervised learning, Unsupervised learning and reinforcement learning.

Supervised learning: As the name suggests it is the method of learning where the programmer or teacher has involvement. The computer is given inputs as well as selected outputs, the aim of this process is to ensure the computer is trained generate desired outputs from the inputs presented.

Unsupervised Learning: A method of machine learning where there are no labels assigned to the algorithm. The data presented to the computer typically consists of only examples. The aim of this process is to allow the computer to discover meaningful patterns in the inputs.

Reinforcement Learning: This method of learning is where the machine or computer must engage with a changing environment. It reaches goals through trail and error, without explicit outputs by programmer.

Machine Learning Everyday Use

Machine learning is everywhere, although the processes are covert and complex the outcomes are part of the 21st century lifestyle. From anti spam software that can filter out emails to fraud detection programs that can detect inconsistency and even to simpler tasks such as search engine options. The camera's that exist today have been influenced by continuously learning, we've seen improved facial detection and object recognition by various camera software. We've seen in recent times autonomous cars that are equipped with 'anti-accident' systems.Machine learning is everywhere as has made daily tasks simpler through improved machine predictions.

The future of ML

The founder of this field of technology Hebert Simon stated that "machines will be capable, within twenty years, of doing any work a man can do". This statement was made in 1965 and holds true today. Computers have surpassed human intelligence in some aspects as they are able to analyse

hundreds and thousands of data sets and find patterns within a short amount of time. The future of ML seems infinitely great as it will only get more precise as more data is received. Industries seperate from tech have only recently begun harnessing the power of this new technology, advertising firms have used ML to effectively target their adverts. Medical diagnostic facilities, entertainment industries, financial sectors and many more fields have embraced ML through their software. As time goes on there will be greater improvements to software and machine learning processes to enable more accurate data and predictions from computers. Machine learning has been promised to save lives, increase economy output by adding trillions to the global economy, it's also been promised to address the current challenges seen around the globe such as climate change and other environmental issues. These advancements will be facilitated by individualised service to users in various sectors, by providing data to these algorithms and machines they can become more accurate in their relevant fields.

To assist machine learning in these industries there are a few changes that need to take place. Societal perception is a key area that must be addressed in order for the future of ML to progress seamlessly. As people interact with machines daily the norm in society has shifted to include more technology in daily life. The new driving force to secure the future of ML should be the basic knowledge of its process, key concepts and foundational teaching need to be the priority of all sectors as it will change the negative public perception of machine learning and artificial intelligence. Lack of understanding of machine learning systems fuel fear and anxiety amongst most people who at times have never even heard of the term ML. These systems are able to perform specific tasks and in some situations can be used to modify or replace existing human roles. It is evident that the advancement of ML will change how work is traditionally done, when change take place there is usually some level of disruption before the change is adapted to. This will hold true as machine learning become more widely accepted in more sectors. To ensure seamless change industries must account for the changes that affect them respectively as they use ML in unique ways.

Personal perception of ML

Machine learning had previously been an area that cause me some level of distress. I can say that it had been due to the lack of knowledge that I had in this field. Although I have a lot to learn of this technology I am more optimistic about its development. I see how it can be used to improve daily life. Simple things that I had overlooked have utilised Machine learning to help its accuracy and efficiency. I personally love things to work efficiently, the promise of ML is that performing simple and complex tasks will be more efficient with it's use. Researching this topic has sparked new change within me, I'm more curious about the technical workings of this new technology and what the processes are. I've been exposed to a whole new way of thinking andI'm optimistic about the future in regards to ML and artificial intelligence in general.

In regards to family member and friends they have not been exposed to the same to machine learning in the same way that I have. They are still apprehensive about it's implications which is understandable. As I mentioned earlier in this piece the public perception of ML tends to be negative. They have fears that it may take over job prospects and have significant presence in all industries. This fear is primarily due to limited understanding, ML needs to be viewed as technology that can assist in making task simpler and improving daily life not as one that threatens or replaces humans. I believe as information becomes more wide spread then people my family and friend included will reduce fears about machine learning and its future.

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