Machine Learning

Machine Learning is a sub-field of Artificial Intelligence. In simple terms it is the act of teaching computers to make accurate guesses when given data. Three categories of Machine learning are: Model Optimisation Process, Decision Process and Error Functions. Model Optimisation Processing is where the algorithm compares a training set of data to the model estimate. From there factors are adjusted to closer match the model to the training data, correcting each test as needed to optimise the process until a certain level of accuracy has been met. Error Functions serve to evaluate predictions within the model. If given examples the algorithm can use this as a comparison to guess how accurate the model will be. Finally, there is Decision Process, this is the act of giving the algorithm data and having it give an estimate relating to patterns in the data.

Self-driving vehicles are one of the most state of the art feats of Machine Learning. Without Machine Learning, vehicles would not be able to interpret signs or images, and thus would not be able to tell what speed to travel at or when to stop. The way this is done is using cameras and sensors, taking in the information constantly to work out how to operate safely. It is undoubtedly the foundation for allowing vehicles to operate without human intervention.

As it stands Machine Learning can be used for a variety of things, including Commute Estimation. An easy example of this is in Google Maps, where smartphone location data is used to predict journey times as well as providing alternative routes if there is a quicker option available. Another example of modern Machine Learning is in Social Networks, where Facebook uses facial recognition to automatically suggest what friends to tag when uploading photos. One of the most amazing uses of Machine Learning is in medical diagnosis. It has been used to accurately diagnose breast cancer in patients by combining the power of Machine Learning with Deep Learning. This technology was developed in the 90’s, however back then the algorithm did not provide a significant increase in positive detections and as such it wasn’t used as widely and nor was the technology advanced further. In more recent years this technique has seen an increase in interest and use, which has led to an advancement in the capabilities of Machine Learning being used in Medical Imaging as a whole.

In the coming years Machine Learning is going to become increasing part of our everyday lives. As technology is becoming more advanced, the way in which we can train it and even what we can train it to do will become streamlined. We may or may not see more breakthroughs like we have seen in the likes of autonomous cars (, but we will see a change in how we use technology to assist with productivity. Things like Speech and Gesture recognition will become more commonplace. The use of Machine Learning in professional environments will see an uptake as well, every workforce will see the technologies they use, as well as their processes become more powerful and efficient.

Machine Learning is made possible from learning algorithms and the data that they are given. The data is given to the algorithm for it to learn, it examines the data to know what information to retain. From there the algorithm can analyse new data and compare it with the knowledge it has. This all sounds incredibly involved, and it is, however you do not need a massively powerful computer to deploy Machine Learning. Consumer grade hardware can provide everything you need if you choose the right components.

Machine Learning will lead to a world where most things can be automated. The way we work, live and play will all be altered with the ongoing advancement. Work will become a much more streamlined process, where it may be as simple as starting a task for a program or algorithm to complete certain tasks for you. Machines will certainly take a step closer to becoming co-workers as they become more advanced. At home devices that benefit from Machine Learning already exist (such as a Home Assistant) and though they can help with basic tasks right now, we are sure to see more advanced devices introduced to help with home living in the coming years.

Everyone be affected either directly or indirectly as machine learning becomes more widely adopted. Teaching robots and programs to do tasks for people will increase our ease of living. Humans will have more time in their daily lives to do the things they would rather do and even have even more assistance when doing it. Everything from a simple task such as turning on a light, to more complex tasks like driving will be made easier and more accessible for everyone, helping make those with disabilities live lives with less challenges.

This will have a massive impact on what jobs are available for people however, machines that have been taught tasks through Machine Learning will occupy more of the workforce. The positive aspect is that there will be opportunities for people to pursue roles making machine learning better and better which will also open new roles in almost every IT field. Outside of the IT field, there will still be jobs that people can do meaning that we will not be forced to only take one career path, we will still have the option to explore working environments and see what we like.

This will affect me personally through many ways. My current job could become more automated or even to the point of taking over my job. Machines have a lot of potential in taking over labor jobs and my job is making sandwiches at subway. If robots were to be developed that could make a sandwich without the help of a human employee, then I could be replaced. Although it could affect my current job, my desired IT job could open new opportunities due to the development of robotics. I could work in robotic/machine related areas to help develop them. If machines were developed then I might consider a different career path in IT due to the new opportunities presenting themselves. For my family that works with cars will have to learn new things about cars in relation to machine learning. This has been seen with the development of computer systems in new cars. If the development of car technology continues my family will have to be able to fix the computer systems in cars if people have problems with them. My older family might struggle to keep up with the development and understanding how it all works. This means they might exclude it from their lives or be forced but struggle to learn. My other family and friends do not really have jobs in areas that could be replaced by machines but if machines learning does develop to a large scale, then it could potentially affect their daily life. For example, if self-driving cars develop then they will have to learn how they work as well as implement it in their daily lives. Machine learning has so many possibilities and potential to change everyone’s lives whether that be with their job or just around the house in their daily lives. Mostly machine learning development would have positive impact for my family, friends, and I.

References:

<https://www.expert.ai/blog/machine-learning-definition/>

<https://research.csiro.au/mlai-fsp/>

<https://www.ibm.com/cloud/learn/machine-learning>

<https://mindy-support.com/news-post/how-machine-learning-in-automotive-makes-self-driving-cars-a-reality/>

<https://emerj.com/ai-sector-overviews/deep-learning-in-oncology/>

<https://www.forbes.com/sites/quora/2017/09/06/ten-things-everyone-should-know-about-machine-learning/?sh=2fa923024e9e>

<https://medium.com/the-mission/how-to-build-the-perfect-deep-learning-computer-and-save-thousands-of-dollars-9ec3b2eb4ce2>