Machine Learning

What does it do

What is the state of the art of this new technology?

Machine learning in the past started with basic pattern recognition allowing computers to be programmed to perform specific tasks. But as the interesting of artificial intelligence grew programmers wanted to see if computers could learn from data already stored on them. Machine learning of today is so different from machine learning in the past, today as computers are exposed to new data, they can independently adapt to that new information. They can learn from any previous computations to produce reliable decision's and results. With today's learning algorithms it is the ability to complete complex calculations with a small amount of data rather than a large amount of data and the ability to complete these calculations repeatedly, and faster and faster. With machine learning the ability for computer to produce a result from multiple sources of data it is being fed, this enables the machine to make quick decisions and produce a reliable outcome, it enables autonomous cars to be able to sense the area around them and to react accordingly. [2]

What can be done now?

Many industries today that accumulate large amounts of data can use machine learning to enable them to work more efficiently and to gain an advantage over their competitors. Financial institutes can identify investment opportunities to prevent fraud and help investors, it is also used for cyber security and to identify potential fraud. With healthcare the amount of data received from wearable devices and sensors enables Healthcare professionals to analyse this data to help with

diagnosing and treatment for patients. Within the retail industry, machine learning can analyse a customer's buying history, and with this specific data it is able to make targeted advertising to the customer for a more personalised shopping experience for the customer. And with the transportation industry, patterns can be identified with usage, popularity of certain routes, peak periods. This enables them to make more reliable and cost-effective routes. [1]

What is likely to be able to do be done soon (say in the next 3 years)?

I consider over the next few years more and more businesses will use machine learning as part of their daily business. With machine learning becoming more and more common, I consider there will be new companies starting up, specifically in programming algorithms for businesses and for artificial intelligence. Medicine and biology will increasingly be using machine learning applications as this technology becomes more and more sophisticated, CT and MRI scans will be able to be analysed by machine learning programs and to aid the medical profession and scientists in identifying any disease or problems sooner. [3] I feel that with medicine there will be more surgery procedures performed by robots with 100% accuracy.

What technological or other developments make this possible?

The development that make possible machine learning is a above all data. The more the data that is supplied for the algorithm the more accurate the predictions will be. The development and introduction of learning methods has greatly helped with machine learning. The two main learning methods are, supervised learning and unsupervised learning. With supervised learning a large amount of labelled data is fed to the algorithm where a desired output is known, the algorithm learns by comparing the actual output with the desired output and then

modifies the model to produce the desired output. With unsupervised learning, algorithms are given data that has no labels. With this learning algorithms identify patterns within the data that have similarities with each other, enabling the data to be categorised. With the development of other learning sets (Semi-supervised learning and Reinforcement learning), machine learning has become more accurate.

What is the likely impact

What is the potential impact of this development?

Everyday life will be impacted with the development of machine learning. Smart technology will get smarter and even dumb technology will start to get smarter, the kettle will switch on when it knows you want a cup of tea. With autonomous cars being able to drive safe than we can, With the healthcare profession able to diagnose patients much faster and with more accuracy, new innovations in drug treatment, will make us all healthier and safer.

What is likely to change?

One likely change is the way we may not be using currency. With machine learning you be able to walk into a store, pick up any items you require and walk out without the need to use your credit card, all with the aid of facial recognition. The way we Interact with technology will change, no longer will we switch on the TV just watch a program, we will start to talk to the TV and start having a conversation with it.

Which people will be most affected and how?

I feel that most people if not all people will be affected by machine learning in one way or another. As machine learning gets integrated more and more into daily

lives, with smart phones, smart TV's etc, we will become more and more reliant with what machine learning has to offer. The effect will be minimal, but the result will be positive.

Will this create, replace or make redundant any current jobs or technologies?

With the growth of machine learning, I consider it would create many job opportunities. I consider a new job market will be created for data collection, this may be though people answering questionnaires in the street to web designers, designing a web-based questionnaire.

Major chip designers and small start-up companies are now designing and creating processing chips that are specifically designed for machine learning i.e. Googles Tensor Processing Unit.

How will this affect you

In your daily life, how will this affect you?

The effect that machine learning will have on my daily life, I consider to be a double-edged sword. On one hand I would have the convenience of speed, if I order an item then I know I could have it delivered within the same day with autonomous drones. If I want to go on holiday all I need to do is just tell the car where I want to go and let the car take me there, without the worry of having work out a route. But I feel that all the advantages machine language has to offer, it could make me lazier and less able to think for myself.

What will be different for you?

I feel that there will be no one thing that will be different for me, at the moment. Understanding that machine learning is becoming more and more part of

my daily life and understanding the advantages that machine learning has with-in my life. Also knowing that machine learning runs in the background and it is only the end result that I can see, this may make a difference in the way I feel about a cashless, card less sociality that is driven around by autonomous cars.

How might this affect members of your family or your friends?

The effect machine learning will have on family and friends is understanding what machine learning does. There may be a bit of fear, and a bit of scepticism, but overall, I don't consider this will affect them. The older members of my family may embrace the convenience that machine learning has to offer, especially in the medical field where their illnesses can be diagnosed with a better accuracy. With the younger generation of my family, machine learning is already part of their daily lives and to them it may be just another one of them things that they are completely innocent and unaware in how much it is an impact on their daily lives.

[1] *https://www.sas.com/en_us/insights/analytics/machine-learning.html*

[2] *https://www.quora.com/profile/Thommen-George-Karimpanal*

[3] *https://www.news-medical.net/life-sciences/Is-Machine-Learning-the-Future-of-Bioinformatics.aspx*