Machine Learning

Arthur Samuel coined the term Machine Learning as the “*field of study that gives computers the ability to learn without being explicitly programmed*”(Amin, S. 2018). From then to now there have been drastic improvements in what Machine Learning is capable of. Machine Learning is providing huge insights into many industries. It has applications in almost every part of society from healthcare to retail. Being able to find trends in a variety of source materials is allowing many professions to execute strategies and find results that previously would have taken much longer if done by a human. Healthcare, Retail and Autonomous cars were 3 areas I found Machine Learning's impact on to be particularly interesting.

Medical

In this field, the application is downright astonishing. Machine Learning is creating opportunities for everyone to get better health care. Google's Deepmind has made some interesting breakthroughs for the medical industry through the use of Machine Learning. In conjunction with Moorfield Eye Hospital, they have developed a method of analysing Eye scans to detect 50 Eye disease conditions with a 94.5% accuracy(DeepMind 2016). A blog post on Deepmind's website on 31/07/2019 also details how after working with the US Department of Veteran Affairs they created an algorithm to detect Acute Kidney Injury. It correctly identified 9 out of 10 people which if implementable at scale in combination with the communication platform streams, could put a huge dent in the UK's yearly NHS expenditure of one billion dollars on this condition(Suleyman, M. and King, D. 2019).

With so many different companies trying to find the next breakthrough it's hard to say which breakthrough will be next. One possibility is the compiling of all medical records to analyse trends around common occurrences before certain diseases emerge. Another interesting paper published in 2019 is how machine learning may help to highlight the early stages of Alzheimer's Disease by monitoring the language a person is using(Kong, W., Jang, H., Carenini, G. and Field, T. 2019).

Retail

In the retail space, Machine Learning has created a more targeted environment by analysing trends across a variety of retail businesses and giving suggestions on ways to improve operational metrics.

Fashion is an ever-changing market and Machine Learning is helping companies get on trends sooner. They are doing this by using Machine learning to create algorithms that analyse social media posts for increased use of certain words. This gives clothing brands an idea that a piece of apparel is increasing in popularity and allows them to tailor their inventory faster (Johnson, T. 2019).

In fashion and other businesses, the ability to input large amounts of data based on previous purchases and comparing to other people who bought similar things, is drastically increasing the effectiveness of marketing and saving money by creating targeted offers. Not to mention being able to, with relative accuracy, predict sales this is also minimising inventory and logistics issues. This is saving the retail sector millions.

Autonomous Cars

Machine Learning for Autonomous vehicles has become crucial to these becoming a regular part of society. Machine Learning allows real-world data and simulation data to create a set of rules for what will happen in an environment. For example, if a person steps off the pavement will the car stop or swerve around them. After the Uber incident where a woman was tragically killed, Autonomous are now tasked with making sure they are equipped to deal with almost anything. Two companies who are at the forefront of this technology are Waymo and Tesla.

Waymo has run 10 million miles in the real world and 10 billion miles in simulation. The reason they have been able to achieve this is machine learning has helped them to allow the project to teach itself about ideal outcomes. They currently operate in Phoenix and are planning to roll out to many more locations shortly (Waymo Team 2019).

Uber has taken the approach of using their five hundred thousand cars on the road to gather their data. This will allow them to utilise real-world probabilities and gain a more real-world algorithm. This potentially could be a massive advantage on Waymo as it would accumulate 5.4 billion miles of data yearly (Eady, T. 2019).

Impact

Medical

We are likely to see more breakthroughs that find trends and create a better understanding of how certain diseases occur. This will result in better care all round for every patient that enters a hospital. We won't see a reduction in doctors just a more efficient health industry, as they can make better decisions faster with the implementation of Machine Learning algorithms put into practice.

Retail

In the retail space, the intended result is people spend more money. When you're able to tailor your services to what's happening in your retail space the ability to make money becomes easier. Analysing trends will only get better and eventually, this will offer suggestions for new products or potentially come up with one that hasn't been thought of. Bottom line is making more money with less risk and better inventory controls.

Autonomous Cars

In the next few years, we will potentially see a bigger presence in the US market, however, it's hard to think it will make a massive impact just yet. There will be a lot of testing from here. Should the testing all go according to plan we will see more cars hit the road and some time in the not too distant future we will likely see a drastic reduction in Taxis and Long Haul trucking. Short-haul trucks will still be required to navigate complex tasks and offload small amounts of stock.

Personal impact

Medical

Going forward having all of my data in one place and being able to see a medical professional who is being double-checked by an algorithm designed by machine learning will greatly improve the chances of an accurate diagnosis. I'll be able to have my records checked against other people in similar lifestyles and be told about the potential problems I should avoid.

Retail

As I currently work in retail, the better the data we have the easier it is to sell. With targeted marketing becoming so big as a retailer you have to appreciate the impact this has had on the way we do things. From a personal standpoint, I see my recommendations getting better the longer the algorithms run. I'll be offered things I need more closely to when I need them. Systems will figure out when I'm window shopping and when I'm ready to make a purchase, instead of bombarding me all of the time.

Self Driving Cars

Self Driving cars are out of my price range currently. In the next few years, we are yet to see if one will make it to market in Australia. The idea of safer commutes is something I look forward too however it's a wait and see. I do have a visually impaired friend who can see close up but not far away. The ability for her to own a vehicle and go where she wants when she wants would be a huge advantage for her.

These are just a few examples of what we're able to achieve and the impacts they'll have on our society. We're yet to even scratch the surface of the unbelievable potential Machine Learning will have for society. I look forward to seeing how my life will improve and change from the breakthroughs Machine Learning makes.

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