

How AI will help you live forever then eat your lunch.

The Turing machine that broke the enigma code during WWII was the birth of Artificial Intelligence (AI). However since then, the adoption of AI has mainly been confined to the manufacturing, transportation and distribution sectors; with the rise of robots that build Japanese cars and stack Amazon warehouses. But now AI is moving leaps and bounds into the service sector including: game playing, self driving vehicles, facial recognition, customer service chat bots, language translation and even medical surgery.

AI consists of two strains: machine learning and deep learning. Deep learning seeks a statistical inference from a small part of the data and then apply all that it has “learnt” upto that stage to the next small part until all parts have been examined, similar to the way a human will adapt from experience. Machine learning seeks to extract a statistical inference intermediately from the whole data. Your preference would depend on whether you believe the way humans learn is superior, although there are statistical methods of measurements that provide a guide as to which gives the best results based on the PREVIOUS data. The resources to develop both deep and machine learning are: free, open source and available on-line to all who wish to utilise.

The benefit of AI is that it can provide: repeatable results, irrespective of the behavioural bias of humans and with unimaginable productivity. Repeatable results allow an amount of certainty as to performance in the future. A lack of behavioural bias provides results without human failings such as: hangovers, partner disputes, career pressure, saving face and emotional attachment to incorrect decisions. However where AI comes into its own is handling exponential growing amounts of data and choices, that our 10,000 year old brain design is not equipped for.

An early adopter of AI in investment management was the Medallion Fund of Renaissance Technologies with spectacular results for over 30 years. However the majority of adoption has been on the sell side with automated customer service departments and robo-advisors that provide asset allocation portfolios to retail markets. The downside of the recent adoption being, data scientists and computer programmers extract the most perfect result from the available data without any understanding as to whether the input data is correct or relevant to the result (“garbage in garbage out”) or, if the model has any intellectual rigour. Leading to failure once the program goes “live”.

Market participants can either accept or reject the relevance of AI on the investment industry, I can only give you our story.....

Way back in autumn 2016 as CIO of a Swiss based multi-family office it was out of scientific curiosity that I attended a seminar on AI coding (computer programming). It was given by a former CERN employee, who discussed how they discovered “The God Particle” or “Higgs-Boson”, the smallest sub-atomic particle for which I still have a still have an early edition of the same named book. However as someone steeped in investment education and not quantum physics it appeared easier to utilised these techniques in my chosen professional field, any by the end of that year we were ready to go live.

Initially we had a macro model for the US economy that provided basic asset allocation. Our model accessed the limitless information provided by Federal Reserve Banks and the rest of the internet. The trick was knowing which information was relevant to use. In the last thirty years we already had two “new paradigms” called by the economic community. And as someone who skipped his undergraduate econometric exam due to never getting beyond being asked for a password on the university computer, this could have been a show stopper. However in 2008 our office had already delivered a 23% investment return against the 45% fall in the S&P 500, that was the result of: experience in several previous economic cycles, admitting and learning from mistakes, strong

outperformance of managing a multi sector portfolio for a big four UK bank, and actually attending and getting some decent grades in international, monetary and fiscal economic undergraduate exams.

Our US economic model actually gives us an eighteen month forward forecast, which allows us adjust the portfolios in a timely manner, and back in early 2017 we were still very bullish. Due to our very strong stock picking abilities (long and short) the next stage was to utilise the AI to assist in this task. We took the universe of stocks with a US, ADR, Canadian or UK listing and a market capitalisation of over \$1billion, that is over 6000 stocks. Again the challenge was to choose the relevant input data, be it: fundamental, technical, industry, company or independent news, as well as the multiple other sources, for example, outperformance against Google “usual customer attendance” matrix. Our limiting factor was the intel i5 core processor that our AI was using (we wish to avoid the cloud due to security issues), which again meant that we could only choose a few most relevant inputs. This resulted in the very strong appearance of Chinese stocks, some of which produced returns of nearly 200% over the year. It was an obvious step to develop an AI macro model of the Chinese economy, which by coincidence was the second largest. However during 2017 our US economic model started to flash recession meaning we would soon need to move to fixed income and so also developed an AI model for the US 10 treasury.

Despite our massive risk adjusted performance of 2017, in 2018 we had a little underperformance as we transitioned to the cautious portfolio, caused mainly by the poor performance of our individual stock positions. We reprogrammed our stock picking AI to allow it to make better decisions given the stage in the economic cycle and this year it is producing absolute returns on a monthly basis whilst being net short the market. Our biggest problem is what to do with all our cash, especially given our AI US 10 treasury view is not positive (in contrast to our traditional methods), so we are investing in 3 month corporate bonds.

After the initial success we had an obvious capital requirement to invest in internal hardware, purchasing the top of the range “gaming” computers with the best CPU and GPU. In AI the CPU is used for the machine learning software and the GPU is used for the deep learning software. We have further developed, “natural language processing” AI to provide sentiment analysis on news flow especially transcripts, reading and deciphering in a matter of seconds as opposed to the hours a human would take.

So what is my job as the CIO of an AI driven MFO? It is both master and servant; as servant it is to ensure that the data the AI receives is not garbage and, as master it is to reprogram the AI to take account of changing computing, economic and investment circumstances. Can the AI do these spare roles? As servant certainly, for us it's a matter of cost effectiveness, will the time taken writing and testing the code be recouped by using the code, at this moment we are happy just to run our human eye over the data to ensure accuracy and suitability. Can the AI learn from its own mistakes and take over the master role? The beauty of deep learning is that it is unsupervised (it can choose its own inputs) take for example the champion Go program developed by Deep Mind (also UCL alumni) after given the rules it taught itself strategy or, Google language translation that no longer needs a Rosetta Stone, it can understand just by word structure. Unfortunately we don't have the resources to develop these high level creative solutions, whilst undoubtedly some of the larger houses do, their decision makers are steeped the fear of losing their jobs and, their indecisiveness provides us with an alpha to harvest.

So what have I done, I've cloned myself as a senior level analyst to live forever but instead of eating my lunch it is eating the lunch of the 2000 other analysts I would have had to employ to get the same level of productivity.

Whilst it will be very difficult for AI to capture the creativity of genius (“thinking outside the box”) it can certainly do the hard-work.

Suffice to say there is very little genius in the top professions: law, medicine, engineering, architecture, hairdressing etc. so the service sector is not immune to disruption.

In fact, where there is enough data on any successful person decision making in an professional industry, AI can isolate the factors that made them successful, and then apply these factors to opportunities for eternity.

Steven J Cohen CFA is the principal and CIO of a Zurich based multi-family office. He gained his BSc Econ from UCL, spent several years in Chartered Accountancy and had established a retail clothing firm in central London. He was in-house counsel to the wealthiest family in the UK and managed a multi billion dollar portfolio for a big 4 UK bank. After a very successful 2007 & 2008 he established his family office and today develops artificial intelligence generated investment strategies for an increasing Asian client base.