LOBNEK
WEALTH MANAGEMENT

The Future Of Everything

Newsletter, July 2019

"The mind is everything. What you think, you become."
Gautama Buddha (563 –483 BCE), Religious leader on whose teaching's Buddhism was founded

Alan Turing, with his cunning intellect, played a pivotal role in deciphering intercepted code from the Germans during the Second World War, providing the allies with a substantial edge at critical moments of the conflict. It is, however, in his work on theoretical computing that his contributions continue to reverberate to this day. Turing laid the foundations of artificial intelligence (AI), opening pathways that are behind most of the groundbreaking progress seen in the last few years. The reason why most of the breakthroughs are only happening now is mainly because the necessary computing power to achieve them have only been possible recently. The acceleration in processing power is ushering us into an era of machine intelligence, one that brings us closer to the point of singularity[1].

Turing had anticipated a day when we would eventually cross that threshold and devised a simple test, a method that would allow us to determine in an as objective manner as possible whether the machine had become "smart" enough to fool us into thinking that it was human. The technique consisted in exposing the tester to a text-based chat interface, a crude version of the ubiquitous messaging apps used today, to communicate with the machine. The tester would be provided with full discretion to ask any question they wished over a preset time period. The AI would be deemed to have "passed the test" if it was indistinguishable from communicating with another human.

The Turing test was far from being infallible to the philosophical complexities in defining human intelligence in a non-arbitrary manner[2], nor to the elusive concept of "awareness", for which a whole battery of other tests were being devised and conducted. Today's AI algorithms unsurprisingly borrow heavily from the human mind playbook, focusing predominantly on the principals of "reinforcement learning". This is a branch of machine learning that, in its most basic form, deals with attempting to maximize a pre-defined "reward" target by testing various pathways to achieving it[3]. The process depends heavily on iterations or "trials and errors", whereby pattern-forming pathways are identified and may be reinforced further through continual feedback loops. Once a potential "pattern" is identified, its importance will be determined by the "weight" that is attributed to it. This is essentially the foundation of machine learning as it is practiced today.

[1] https://en.wikipedia.org/wiki/Technological_singularity
[2] https://en.wikipedia.org/wiki/Turing_test#Weaknesses
[3] https://en.wikipedia.org/wiki/Reinforcement_learning

Chess, in its most crude form, is a purely rules-based game and can thus be easily modeled for machines to master. Any basic algorithm can do the job, which explains why chess playing computers have been around for so long. The Chinese board game of Go, however, is a different story. It is more difficult to model, due in part to its greater complexity from having significantly more alternatives to consider per move. Unlike with chess, Go masters have remained relatively unchallenged by machines until very recently. Reinforcement learning appears to be changing the paradigm in ways that not too long ago might have seemed impossible[4]. By "exposing" a reinforcement learning powered machine to a very large number of iterations of a game, the AI, it seems, is capable of eventually mastering it. This is a process that is bound to improve over time as DeepMind's recent accomplishments appear to suggest[5].

The machine learning's impressive strides are possible because of a combination of two essential elements: algorithms have become increasingly sophisticated and more information can be processed over an increasingly shorter time frame, meaning that we can now run far larger quantities of "trial and errors" from which to extrapolate insightful patterns[6]. We may not yet be at that point of singularity[7] where machine intelligence surpasses that of humans, but the breakneck pace is bringing us ever so closer. The applications of AI are endless in the ways in which they can augment and improve our lives. AI could potentially resolve some of our greatest challenges which could come in handy at a time where our planet's resources are being depleted at an alarming rate.

Technology is ushering us into a future in which the lines between reality and the virtual are increasingly being blurred, augmenting our lives in ways that not too long ago would have been relegated to the realm of fantasy. Arthur C. Clarke, the British science fiction writer once said that "any sufficiently advanced technology is indistinguishable from magic". Watching Sophia, the humanoid robot of Hanson robotics interact with humans, one can't help but marvel at the "magic" behind "her". It shows how far we have come from the crude automatons of the middle ages. Sophia's facial expressions are impressive to say the least, but it is clearly the artificial intelligence behind her verbal interactions that makes all the difference. A difference that also shows how incredibly close we are to the point of singularity. For more on Sophia and the work we do with AI, please follow Lobnek Wealth Management on LinkedIn, where you will be able to watch soon-to-be released footage of that incredible humanoid robot during the International Forum on Women's Brain and Mental Health held in Zurich in June, that we were honored to sponsor.

Just as with the dawn of the nuclear age, untethered or untamed AI contains seeds of destructiveness. The emergence of deepfake or AI enabled surveillance systems that are currently being deployed across parts of the world are just early examples of the kind of threats that AI could pose to democracies[8]. We currently have the means of weaponizing insentient AI systems, unleashing highly effective killing machines to fight asymmetric wars. Without strict regulation and international treaties, it may be just a matter of time before this new "arms race" begins to threaten our very existence.

At this stage you may be wondering what AI has to do with finance and investing or what benefits may be extrapolated from it. The answer would be almost everything if we just stop and consider everything that the human mind has conceived to this day. Imagine centuries of achievements compressed over a fraction of the time. Forget high frequency trading and everything else that came before, although they do have their place. It is AI that will be dominating the investments field, second guessing the markets with unmatched efficiency and effectiveness at every turn. In this new era of emerging machine intelligence, it appears that two factors will determine success: the degree of intelligence and the amount and quality of the information to which it has access.

[4] https://www.theverge.com/2017/12/6/16741106/deepmind-ai-chess-alphazero-shogi-go
[5] https://science.sciencemag.org/content/364/6443/859
[6] https://www.nytimes.com/2019/05/30/science/deep-mind-artificial-intelligence.html
[7] Ray Kurzweil estimates that with the current trajectory in Moore's law, the point of singularity is likely to be reached sometime in 2030-40.
[8] https://www.theguardian.com/commentisfree/2019/jun/15/deepfake-videos-corrupt-democracy-mark-zuckerberg?CMP=Share_iOSApp_Other

Where Do We Go From Here?

As markets continue to dismiss a growing roster of headwinds, whether it be the trade tensions between the US and China, the ongoing Brexit debacle or the gravitational pull of cyclically driven factors, one can't help but wonder how long this unfounded optimism will last. The earnings and stimulus fuel are being rapidly depleted, but global markets appear to shrug that off and focus instead on Fed guidance and Trump's erratic policy decisions, with the hope that these will somehow keep the economy chugging along. Both the Fed and Trump are having a put-option like effect on the markets, drawing a floor that is essentially limiting more significant drawdowns from materializing.

The Fed's latest guidance suggests a sharp reversal of course from hawkish to accommodative, leaning towards stimulus in response to market conditions that show increasing signs of weakness. The pooled central bank efforts across the globe having succeeded in dampening the negative effects of the sub-prime crisis, followed by a long-standing market rally, seem to have created a perception that the Fed is somehow in control and can handle almost anything that is thrown at it. That unwarranted confidence is being reinforced by Trump's continual backtracking between confrontation and conciliation that he is applying on his trading partners, presenting the end result as an economic win when in fact there are little tangible gains to show[9].

The Fed has an arduous task ahead, having to maneuver in an environment increasingly defined by its complexities and constraints. The challenge will be to maintain the economy on a steady footing despite limited stimulus capacity and with inflation stubbornly anchored below target, all the while having to maintain a semblance of independence from the executive branch. The ECB, having depleted an even greater portion of its stimulus firepower (stemming from the very low interest rate environment and a bloated balance sheet) is in an arguably less enviable position. It is having to confront a European economy that appears to be on the brink of contraction[10]. The ongoing Brexit confusion, populism gains from the parliamentary elections and signs of further economic weakness amongst the larger economies of the region are creating ideal conditions for another market turmoil.

Global growth headwinds are likely to rise further as escalating trade tensions continue to dampen appetite for both demand and supply, spilling over broader regions through integrated supply chains. A more challenging economic environment will saw the seeds of further discourse, causing greater divisiveness within countries and across borders that could eventually trigger difficult to contain armed conflicts. The superpowers of the future will be determined by the degree to which they dominate AI and data, as the race has begun to build the most advanced AI system and feed it with mounds of data. The further "electrification" of the economy, by creating lesser dependence on fossil fuels, will also be of increasing strategic importance. Although both China and the U.S. are currently dominant in these fields, the political climate is such that it is difficult to predict how these will evolve or the ways in which they are likely to affect and shape our lives.

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[9] Trump's style (or lack thereof) of governance, although erratic at the core, does appear to contain market sensitive patterns. His threats, whether against trading partners or foes, contain a lot of "hot air" posturing as they almost invariably lead to some form of deal making. Part of the recent market rally has been attributed to a "potential" thaw in relations between the U.S. and China.

[10] China's economic slowdown appears to be spilling over into Germany through globally integrated supply chains with the car manufacturing sector facing a double whammy of cyclically and protectionist driven drop in demand, forcing businesses to postpone large project investments. In Italy the banking sector continues to be the weak link in the economy, threatening contagion across the continent.