The Fourth Industrial Revolution – The New Wave of Artificial Intelligence   August 2023

- Innovation and technological advancements have fueled economic growth, shaping our modern world
- AI is not a new concept, but recent innovations could have lasting impacts
- Disruptive technologies have historically created new opportunities along with winners and losers

Impact of Innovation

Throughout history, technological advances have played a pivotal role in fueling economic growth and shaping societies alike. From the earliest inventions, such as the ladder, to the cutting-edge digital technologies of present day, each leap forward has unleashed a wave of transformational power on economies worldwide. Artificial Intelligence (AI) is the latest innovation that could reshape our daily lives.

Historical Technological Advances and Economic Impact

AI is being considered "The Fourth Industrial Revolution." So, it is only fitting to look at past industrial revolutions as an indicator for the future. The first Industrial Revolution had impacts that unfolded over decades as steam power adoption and the maturing of newly created industries took time. This progress led to the second industrial revolution in the late 19th century, featuring advancements like electricity, assembly line production, and transportation improvements. This era facilitated global connectivity and laid the foundation for the third industrial revolution, the Digital Revolution, characterized by computers, digital technologies, and the internet. Similarly, AI could represent a transformative force that empowers automation and creates efficiencies in a manner reminiscent of past technological revolutions.

Four Stages of Industrial Revolution
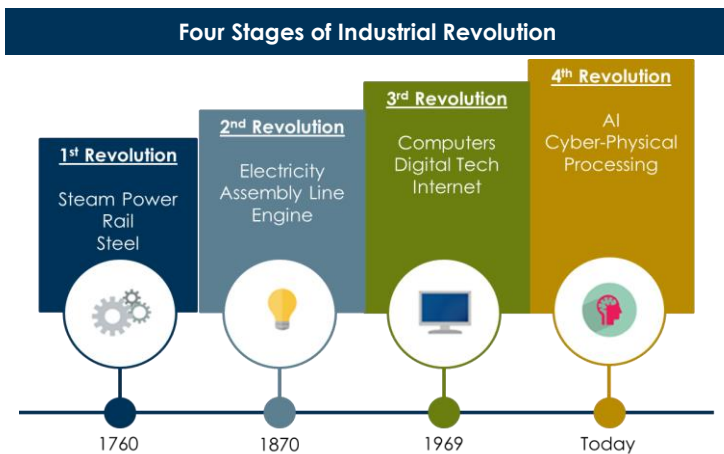
Source: World Economic Forum, ACG

Artificial Intelligence Evolution

AI began its journey in the 1950s with Theseus, a small robotic mouse that could solve and remember mazes, hinting at the potential for machines to learn. In the 1960s, neural networks emerged mimicking human brain processes, and later, the rise of the internet provided AI systems enough input to learn and adapt. However, the recent evolution in AI has been due to advancements in computational power. Floating Point Operations per Second (FLOPS) is a key metric to measure how fast a computer can perform calculations. For reference, the first AI programs had computing power measured in kiloFLOPS (1000 FLOPS). Today, we have reached the era of petaFLOPS (1 quadrillion FLOPS) and beyond. To help comprehend that level of computational power, it would take about 31.7 million years for someone to count from one to one quadrillion.

Computational Power of AI Systems Through Time (FLOPS)
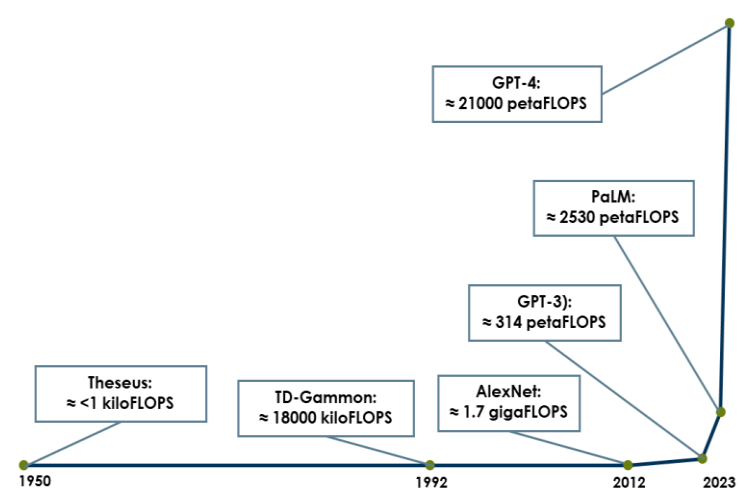
Source: University of Oxford (Our World In Data), ACG

Risks and Concerns with Artificial Intelligence

One critical concern in today's context is the concept of "technological unemployment," a term coined by economist John Maynard Keynes, which refers to the potential for mass unemployment as technological advancements improve productivity, reducing the need for human labor. Additional issues include bias and fairness, data transparency, and concerns over dependence and control. Mitigating these risks will play an important role in the success of AI going forward.

Winners and Losers of Innovation

With every technological advancement, new industries are born and businesses will seek to exploit untapped market potential. Yet, as competition intensifies, only a select few will rise as industry leaders, while the majority may falter. Take, for instance, the early internet era where the need to navigate the vast online landscape led to the beginning of search engines. Although numerous companies sprung up, only a few like Google and Bing achieved success. The same may hold true for AI. The AI landscape is diverse and rapidly changing. Companies currently reaping the benefits are those engaged in developing large language models, providing cloud storage, and supplying the hardware to power AI. While this is likely the initial stage, the future of AI remains uncertain. Just like past industrial revolutions, it will take time for AI to integrate into society and for its economic impact to be observable.

ACG's Position

While it is tempting to invest in headline-grabbing thematic ideas, it is important to understand the inherent risks of concentrating portfolios in themes that are likely to evolve and shift over time. We believe maintaining a diversified portfolio can help mitigate risks while providing exposure to a range of thematic trends, including AI.

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