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ALTERNATIVE THINKING ABOUT INVESTMENTS

New Asia Perspectives

Welcome to Morgan Creek's New Asia Perspectives, an open forum where we share our proprietary research together with curated articles of interest. We seek to offer a variant interpretation of important political and economic events through an Asian lens by leveraging our team's "on the ground" insights and decades-long experience in covering the region. We disseminate our research through newsletters, webinars and periodic whitepapers. Feel free to forward our research to colleagues you think might be interested and please share any interesting research you come across as well. To offer comments, share research, or learn more about our team and investment offerings, please email chinateam@morgancreekcap.com.

Best Regards,

Mark W. Yusko

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CEO & CIO

NOTES FROM THE BUND[1]

Artificial Intelligence "AI" is rapidly emerging as an engine that could revolutionize productivity. According to IDC, global spending on AI, including software, hardware, and services, is expected to reach $154 billion in 2023, a 27% increase year over year ("YoY"). By 2026, AI-related capital expenditure could exceed $300 billion, growing at a 4-year compounded annual growth rate ("CAGR") of 27% since 2022. The United States is expected to represent over half of global AI spending, Western Europe more than 20%, and China the third-largest market. Specifically, China's AI market is projected to hit $15 billion in 2023 and $26 billion by 2026, with a 5-year CAGR of over 20% from 2021.[2] In this series of articles, we will explore the following AI-related topics to provide our perspective on the subject:

- The evolution of AI, the challenges it faced, and the current state of AI
- The supporting elements that are crucial for the development of AI technologies
- The future trajectory of the global AI competitive landscape, especially between the US and China
- China's AI development path and the driving forces behind it

Nearly 70 years have passed since "artificial intelligence" first captured public attention in

the 1956 Dartmouth Conference. The journey of AI has been far from smooth, often circulating back and forth in the early phases of the Gartner Hype Cycle[3], from initial excitement only to disillusionment. History reveals three key issues: incompetent infrastructure, commercialization difficulties, and technological path failures.

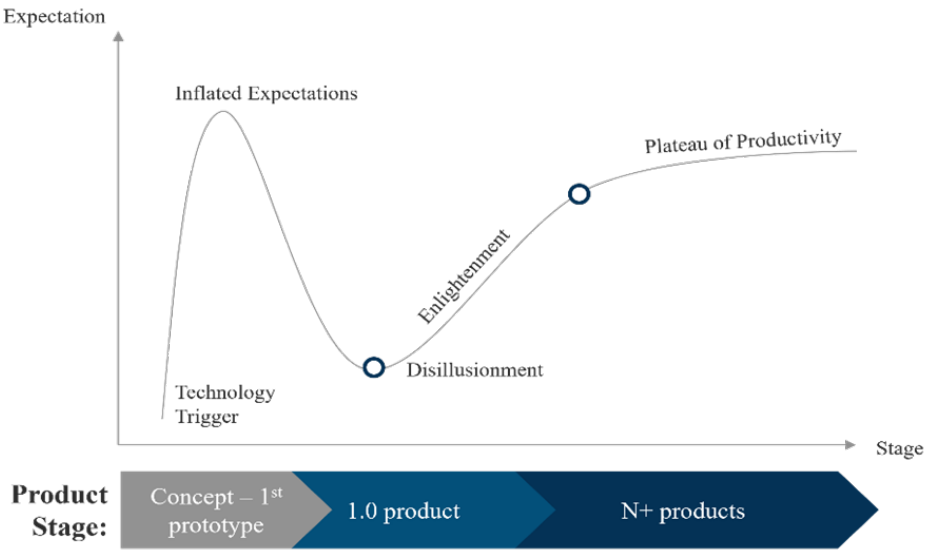

Figure 1: The Gartner Hype Cycle

- **Unrealistic expectations**: In the 1960s, concepts like automated theorem proving[4] and draughts programs[5] attracted significant excitement. However, they failed due to due to the inability to perform even basic reasoning and translation tasks. This is mostly caused by the constrained computational and memory resources available at the time.
- **Commercialization difficulties:** The 1970s witnessed the rise of expert systems[6], reigniting hopes that AI could thrive by first entering into specialized domains, like medical diagnosis and chemistry analysis. Yet again, systems alone faced commercialization obstacles due to the high costs of developing and maintaining knowledge bases[7], as well as the systems' lack of agility in handling new or cross-disciplinary situations.
- **Technological path failures**: Deep learning[8] became the next buzzword, particularly contributed by the success of AlphaGo. However, it relied on reinforcement learning.[9] This application, evolving by repeatedly playing games against itself, doesn't translate well to real-world complexities and lacks sample efficiency. Contrasting sharply with Moore's Law[10], the marginal efficiency of this model has shown a decreasing trend.

Generalization, the ability to handle new tasks and problems, appeared to be AI's most significant hurdle. Fast-forward to today, however, the introduction of Google's Transformer architecture[11], as the foundation in natural language processing (NLP), has ushered in a new era. Debuting in 2022, GPT-3.5, for example, has demonstrated impressive generalization capability, excelling in both natural language understanding and generation across a broad range of topics. This deep understanding of natural language unlocks possibilities for application across various sectors that affect our daily lives.

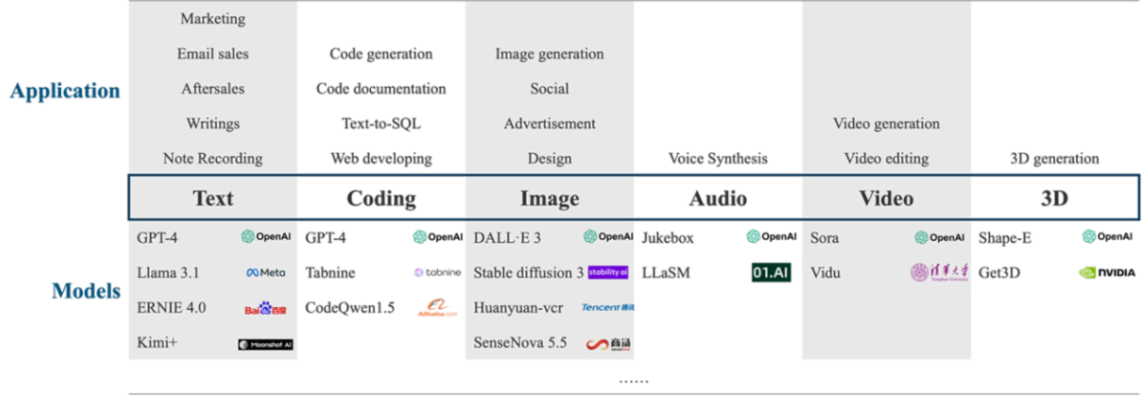

Figure 2: AIGC's application landscape

The potential for commercialization is also emerging, underscored by AI's attractive cost-benefit profile. AI not only proves competitive against human capabilities but also demonstrates promising economies of scale in training costs.

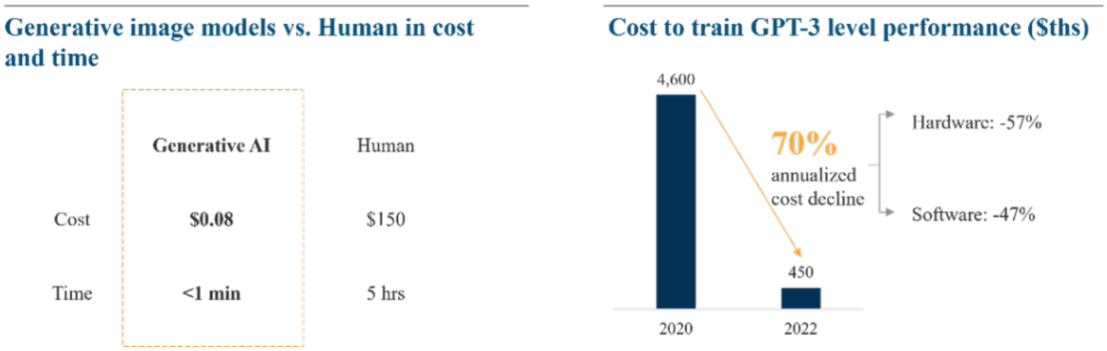

Figure 3: AI showcasing its competitiveness in enhancing productivity[12]

In sum, given the current achievement and possible future trends in AI, it is reasonable to anticipate that the technology may be approaching the next stage of the Gartner Hype Cycle. As it is moving closer to a phase of greater maturity and enlightenment, we expect its practical applications to become more clearly understood and its integration into various sectors to become more seamless and impactful.

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ASIA NEWS SPOTLIGHT

Japan Leads Central Asia Summit Amid Rising Tensions with Russia, China: Japanese Prime Minister Fumio Kishida's landmark three-day visit to Central Asia, beginning Friday, is poised to challenge the existing geopolitical balance in the region. The Central Asia + Japan group will hold its inaugural summit in Astana, Kazakhstan, where Kishida, supported by a delegation of 50 Japanese business leaders, will unveil a strategic $2 billion economic support package. *Read More.*

Secretary-General of ASEAN Meets with Acting Foreign Minister of Sudan: Secretary-General of ASEAN Dr. Kao Kim Hourn today met with the Acting Minister of Foreign Affairs of the Republic of Sudan, Hussein Awad Ali, at the ASEAN Headquarters/ASEAN Secretariat. Their discussion focused on how to strengthen relations between ASEAN and

Sudan, and also engaged in exchanging of views on regional and global developments. *Read More.*

China's Consumer Prices Pick Up More than Expected in July, Up by 0.5%: China's consumer prices rose by a more-than-expected 0.5% in July from a year ago, boosted by a surge in pork prices, according to data from the National Bureau of Statistics released Friday. Analysts polled by Reuters had expected a slight pickup in the consumer price index to 0.3% in July from a year ago, versus 0.2% in June. *Read More.*

AI Takes Centre Stage in Southeast Asia's Biggest Tech Event:
Themed "The World of Tomorrow with AI", the event aimed to cement Thailand's position as the tech gateway of Southeast Asia. The summit delved deep into Artificial Intelligence (AI), exploring its potential to shape the future across five core areas: AI for Growth, AI for Good, AI-Human Symbiosis, AI in Culture, and AI Safety and Governance. *Read More.*

Japan-Singapore Joint Call for Proposals: Japan Science and Technology Agency (JST) and Agency for Science, Technology and Research (A*STAR) 2024: Japan and Singapore have a strong and longstanding partnership in bilateral research collaborations. This new joint grant call by Japan Science and Technology Agency (JST) and the Agency for Science, Technology and Research of Singapore (A*STAR) aims to promote and strengthen bilateral collaborations and exchanges between researchers from Japan and Singapore in joint research projects of mutual interest. *Read More.*

Chip Tech: China Builds 'Sapphire Wafers' to Improve Efficiency: A team of Chinese scientists has made a significant stride in chip technology by developing dielectric wafers made of artificial sapphire. Their groundbreaking research, published in Nature on Wednesday, lays a crucial foundation for the development of more power-efficient chips.
As electronic devices continue to shrink and demand higher performance, the miniaturization of transistors has presented challenges, especially in the realm of dielectric materials. *Read More.*

AI-driven Data Centre Expansion Tests Asia-Pacific's Renewable Energy Readiness: As Asia-Pacific nations gear up to embrace the artificial intelligence boom, the explosive growth in energy-intensive data centres that will come hand in hand is generating concerns about the region's clean energy transition. From Singapore to India, nations are looking to keep more sensitive data within their borders as risks abound in a world fraught with geopolitical tensions including those between the world's two largest economies, the US and China. *Read More.*

Singapore's Climate Tech Startups are Set to Clean Up: Already a major global financial center, Singapore is on a parallel track to become one of the world's top climate tech hubs. While places like Silicon Valley, London and Boston already lead the world in climate tech innovation, Singapore has many assets in its favor like a strong startup ecosystem, government mandates for net-zero and its position as an international trade hub. The city-state is already the climate tech hub of Southeast Asia, and most of the equity funding for the region's climate tech hubs in the first 11 months of 2023 went into Singaporean startups. *Read More.*

China and Australia can Team Up to Boost Asean's Energy Transition: The Australia-China relationship has stabilised after years of geopolitical and trade turbulence. This lays the groundwork for further cooperation, including through joint initiatives in Asia. A significant opportunity lies in Southeast Asia's push towards an electrified future. Almost all countries in the region have committed to achieving net zero carbon emissions, and electrifying the end-user sectors, including transport, is a crucial strategy in this effort. *Read*

More.

[1]The Bund is a historic waterfront area in central Shanghai, where Morgan Creek's office is located. From the 1860s to the 1930s, it was the rich and powerful center of the foreign establishment in Shanghai, operating as a legally protected treaty port. The picture above is part of the historical waterfront.

[2]Source: Worldwide Spending on AI-Centric Systems Forecast to Reach $154 Billion in 2023, According to IDC, https://www.idc.com/, Mar 7th, 2023

[3]Note: The Gartner curve characterizes the typical progression of innovation from overenthusiasm through a period of disillusionment to eventual productivity.

[4]Note: Automated theorem proving is a subfield of automated reasoning and mathematical logic dealing with proving mathematical theorems by computer programs.

[5]Note: Draughts programs are computer programs designed to play the board game Checkers, using strategies and algorithms to make the best moves.

[6]Note: Expert systems are AI programs that use predefined rules and knowledge to make decisions or solve problems in specific areas.

[7]Note: Knowledge base is an organized collection of facts about the system's domain. An inference engine interprets and evaluates the facts in the knowledge base in order to provide an answer.

[8]Note: Deep learning is a type of machine learning that uses neural networks to simulate the complex decision-making power of the human brain.

[9]Note: Reinforcement learning is a machine learning technique that trains software to make decisions to achieve the most optimal results. It mimics the trial-and-error learning process that humans use to achieve their goals.

[10]Note: Moore's Law implies that computers, machines that run on computers, and computing power all become smaller, faster, and cheaper with time as processes become more efficient and components smaller and faster.

[11]Note: Transformer architecture, proposed in a 2017 paper "Attention Is All You Need", is a type of neural network that is good at handling sequences of data, like sentences in a language. It was introduced to make processing and understanding sequences more efficient and effective. Transformers have led to major improvements in understanding and generating text.

[12]Note: Hardware and Software costs are in terms of AI-relative compute unit (RCU) production costs, according to Wright's Law; Source: Big Ideas 2023, https://www.ark-invest.com/, Jan 31st, 2023