

MORGAN CREEK

CAPITAL MANAGEMENT

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@morgancreekcip.com.

Best Regards,

A handwritten signature in black ink that reads "Mark W. Yusko". The signature is written in a cursive, slightly slanted style.

Mark W. Yusko
CEO & CIO

NOTES FROM THE BUND¹

We have briefly explored the impressive potential presented by Large Language Models (LLMs) in recent years. This newsletter will provide a detailed breakdown of the components involved and will highlight the key factors for evaluating the industry. Generally speaking, the AI industry supply chain can be divided into three parts: data supply, model development, and application & distribution.

Currently, model development is the primary focus, with every tech giant racing to advance this area. Training LLMs demands immense compute, with training requirements growing 4-5 times per year.² Training GPT-3, for instance, with 175 billion parameters, needs as much computational power as running a supercomputer at full speed for 3,640 days.³

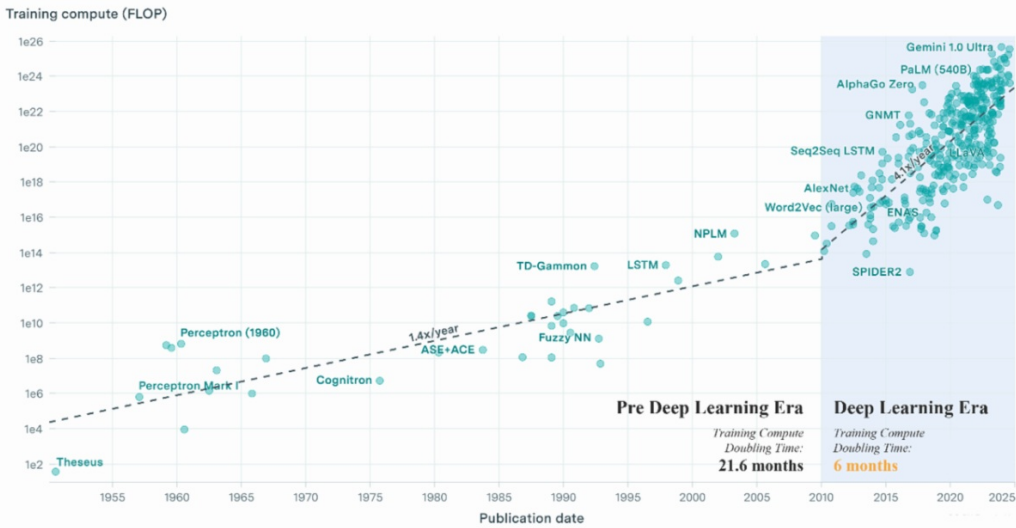


Figure 1: Total compute used to train AI models, measured in total FLOP⁴

Since 2018, the scale of large models has expanded to hundreds of billions of parameters, leading to a dramatic increase in computational needs. To support this growth, we need vast data sets and high-performance computers including AI chips⁵ and AI servers/cloud services. Data centers, built around servers and data, are required to operate continuously, leading to increasing demands for network speed, energy efficiency, and cooling systems. Cost allocation reflects these priorities.

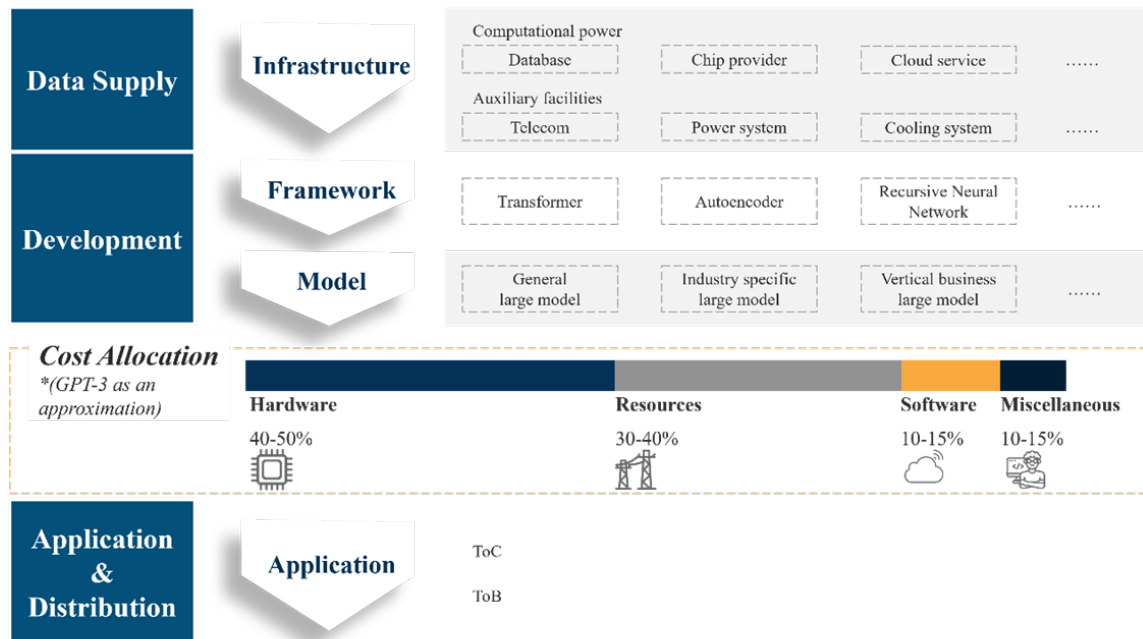


Figure 2: AI supply chain with cost breakdown⁶

We believe the industry is clearly on the path to maximize model functionality, with a strong emphasis on improving performance factors like accuracy, quality, robustness, fairness, scalability and efficiency, etc. These numerical advancements have bolstered public conviction in the area and generated high expectations for its vast market potential. However, the reality is that AI's capabilities have not been fully unfolded or released as expected. In both developed and developing economies, total factor productivity⁷ has not increased and has, in fact, been steadily decreasing since 2021.

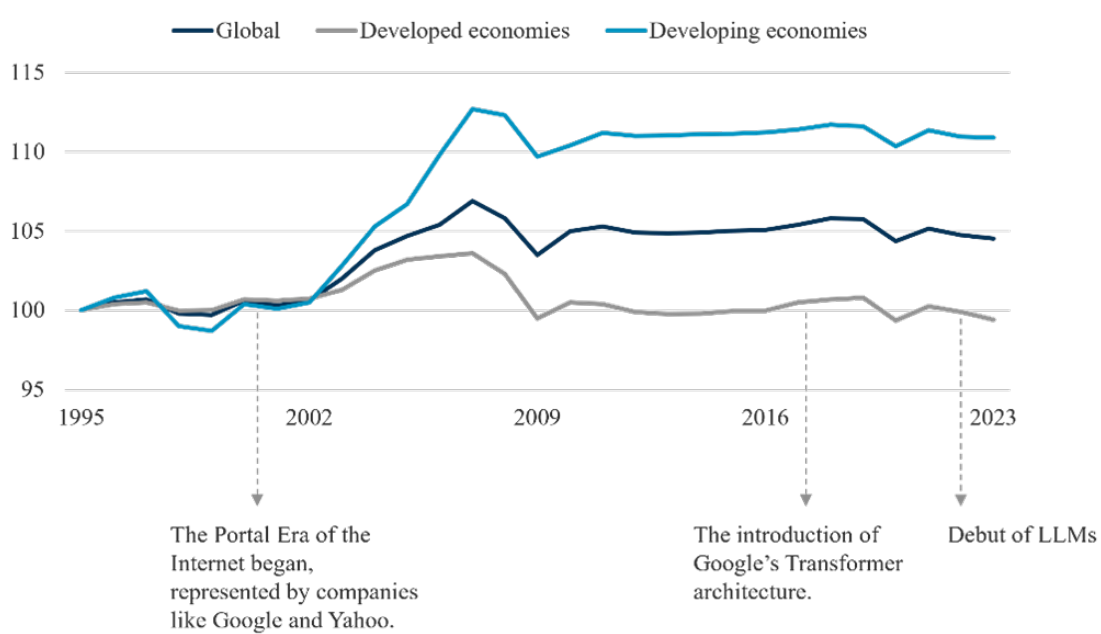


Figure 3: TFP across Global, mature and emerging economies (Index, 1995=100)⁸

Given the above arguments, we draw the following conclusions. First and foremost, AI is unlikely to be a universal solution for all problems. Fundamentally, it should be seen as a tool that assists people rather than an independent individual. With this premise in mind, two key factors are crucial for evaluating such technology:

- **Functionality**, referring to the combination of algorithm, compute, and data, remains fundamental, as it determines AI's advantages over traditional approaches.
- **User case or industry know-how**, serves as a critical multiplier, amplifying the effectiveness and relevance of AI as a tool by applying it to specific contexts and industries.

$$\text{Commercialization} = (\text{Algorithm} + \text{Compute} + \text{Data}) \times \text{User Case}$$

Figure 4: Commercialization equation for AI⁹

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ASIA NEWS SPOTLIGHT

In Major Policy Shift, Singapore announces unemployment support scheme: The Lion City is set to launch an unemployment support scheme for workers who have been laid off or are involuntarily unemployed. The country's prime minister, Lawrence Wong, made the announcement during his National Day Rally speech, in which he spoke of Singapore's economy, education and housing policies. [Read More.](#)

India's Modi Meets Foxconn Chief Amid Probe into Possible Bias in Hiring Practices: Indian Prime Minister Narendra Modi met Foxconn Chairman Young Liu to discuss the latter's investment plans on Wednesday, weeks after New Delhi started investigating possible discriminatory hiring practices at a Foxconn plant following a Reuters report. Modi "highlighted the wonderful opportunities India offers in futuristic sectors" to Liu at the

meeting, he said in a post on X that included photos of the pair. [Read More.](#)

China Stats Show Shift from FDI to Investment Abroad: China has seen an outflow of foreign investment at home and an increase in its own external investment so far this year during its trade war against the United States and Europe. China's direct investment liabilities, an indicator of incoming foreign investment, fell by US\$14.8 billion in the second quarter of this year, according to the latest data released by the State Administration of Foreign Exchange (SAFE). [Read More.](#)

Asia-Pacific Regulations Keep Pace with Rapid Evolution of Artificial Intelligence Technology: Regulation of artificial intelligence (AI) technology in the Asia-Pacific region (APAC) is developing rapidly, with at least 16 jurisdictions having some form of AI guidance or regulation. Some countries are implementing AI-specific laws and regulation, while others take a more "soft" law approach in reliance on nonbinding principles and standards. While regulatory approaches in the region differ, policy drivers feature common principles including responsible use, data security, end-user protection, and human autonomy. [Read More.](#)

This Chinese Autonomous Car Start-Up is About to Go Public in the U.S.: The future of self-driving cars is still a huge question mark, but one Chinese company dealing in the tech is hoping to get U.S. support for its business. WeRide, the Guangzhou-based entity that makes software to power driverless vehicles, could go public on the Nasdaq stock exchange as early as this week, The New York Times reported on Thursday. The company was founded in 2017 by Tony Xu Han, and it currently has a robotaxi pilot program in China and the United Arab Emirates, plus it allows automakers to use its self-driving software. [Read More.](#)

China Energy Engineering Signs \$972 million Solar Deal with Saudi Partners: China Energy Engineering (601868.SS), opens new tab signed a 6.98 billion yuan (\$972 million) contract to build a solar power plant in Saudi Arabia, a Monday filing with the Shanghai Stock Exchange, marking the latest in a string of China-Saudi renewable energy deals. The 2 gigawatt (GW) photovoltaic plant will be built by a joint venture between a China Energy Engineering consortium and Saudi partners sovereign fund PIF, ACWA Power (2082.SE), opens new tab, and Saudi Aramco Power Company. [Read More.](#)

South Korea's New Offshore Wind Roadmap to Enhance Renewable Energy Efforts: The Offshore Wind Power Competitive Bidding Roadmap was recently announced by South Korea's Ministry of Trade, Industry, and Energy (MOTIE). The publication is part of the second phase of the South Korean government's broader strategy to expand renewable energy, following measures to boost solar power generation. The government plans to accelerate the growth of domestic wind power, projected to reach 18.3 gigawatts (GW) by 2030, by initiating competitive bidding for large-scale offshore wind projects. [Read More.](#)

JERA Renewable Energy Unit Acquires 395 MW Solar Projects in US: JERA's renewable energy business JERA Nex has acquired two US solar projects totaling 395 megawatts (MW) from Lightsource bp, marking its first transaction since its launch in April. In a statement, JERA said the assets are the 300 MW Oxbow solar farm in Louisiana, the largest in the state, and the 95 MW Happy solar farm in Arkansas. Both are in commercial operation, with the former having a long-term power purchase agreement (PPA) with corporate customers including eBay, and the latter having a PPA with city-owned utility system Conway Corp. [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: Training Compute of Frontier AI Models Grows by 4-5x per Year, <https://epochai.org/>, May 28, 2024

³ Note: Training GPT-3, with its 175 billion parameters, requires up to 3,640 PetaFLOP-days of computing power, where one PetaFLOP equals 10^{15} FLOPs.

⁴ Note: FLOP stands for Floating Point Operation. It measures computational performance by counting how many floating-point operations (arithmetic operations like addition, subtraction, multiplication, or division involving numbers with decimal points) a system can perform in a given time period. Source: Notable AI Models, <https://epochai.org/>, Jun 19, 2024

⁵ Note: GPUs/TPUs and ASICs are the current mainstream AI chip types.

⁶ Note: The current LLM (Large Language Models) has mainly three categories: Natural Language Processing (NLP), which focuses on understanding human language; Computer Vision (CV), which specializes in image processing; and Multimodal Models, which integrate NLP and CV to handle various types of data, including text, images, and audio. Cost structures may vary slightly among these categories. For clarity and familiarity, we will use GPT-3 as an example. Source: China AIGC Industry Panorama Report 2023, <https://iresearchservices.com/>, Aug 24, 2023; Language Models are Few-Shot Learners, <https://arxiv.org/>, Jul 22, 2020; Shocking: How much energy and cost does AI consume?, <https://www.infoq.cn/>, Nov 22, 2019; The economic potential of generative AI: The next productivity frontier, <https://www.mckinsey.com/>, Jun 14, 2023

⁷ Note: Total factor productivity (TFP) captures the impact of technical development, increases in production, and other unnoticed elements.

⁸ Source: The Conference Board Database

⁹ Note: This equation is for illustrative purposes only.

Important Disclosures

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