IT2024 Supplementary Note 01

September 30, 2024

1 Generative AI Developers

Today, many so-called generative AI tools have been developed for (i) text-to-text generation, (ii) text-to-image generation, (iii) text-to-video generation and (iv) text-to-music generation. Moreover, OpenAI has recently released a model called o1, which is able to reason. As a reference, the following table lists a number of firms and their AI tools being developed.

Developer	Founded	Text (LLM)	Image	Video	Music	Reasoning
Adobe	1982	–	Firefly	–	–	–
Amazon	1994	Titan	Titan	Titan	–	–
Anthropic	2021	Claude	–	–	–	–
BigScience[a]	2021-22	Bloom	–	–	–	–
Canva	2013	–	Magic Studio	–	–	–
Cohere	2019	Cohere	–	–	–	–
Deep AI	2017	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	–
Google	1998	Gemini	Imagen	Veo	MusicLM	??
Meta	2004	Llama	Imagine	Emu Video	MusicGen	??
Midjourney	2022	–	Midjourney	–	–	–
Mistral AI	2023	Mistral	–	–	–	–
OpenAI	2015	ChatGPT	DALL-E	Sora	Jukebox	o1
Stability AI	2019	StableLM	Stable Diffusion	$\checkmark$	$\checkmark$	–
TII[b]	2020	Falcon	–	–	–	–

[a] BigScience Collaborative Initiative. [b]Technology Innovation Institute(TII), UAE.

The above table has not listed any China technical firm which has been developing similar tools. As far as I know, Alibaba, Baidu, Huawei and Tencent have been developing those tools for Chinese text.

1.1 On LLM with Reasoning

As I believe that Google and Meta should have been developing models to do reasoning, ?? is put on the appropriate cells in the table. Indeed, it is believed that Alibaba, Baidu, Huawei and Tencent should have been doing something along this direction.

1.2 On the cell with $\checkmark$

For those cells with $\checkmark$ depicted Deep AI and Stability AI, it indicates that the corresponding firm has claimed the availability of the tool. But, the firm has not given any name for the tool.

1.3 On Investment Budget

From the above table, one should note that many startups can only be developing one generative AI tool. Only those giants, like Google, Meta and Open AI, are able to develop multiple tools for different applications. One reason is clearly due to the R&D budget. To develop a large language model (LLM), the cost is suspectedly huge. Therefore, huge budget might have to be prepared for a firm to survive from the initial development of an AI tool to the time when the tool gets revenue.

2 Technology Product Competition

From the above table, it should be realized that competition amongst generative AI tools has already started. Within a few years from now, some tools will get largely adopted. Some tools will be obsolete. In my lifetime so far, at least three technology competitions have been witnessed.

2.1 Mainframe vs Personal Computer

Starting from 1970s, there has been a competition between the mainframe computer and the personal computer. Owing the to advancement on the processors, the computational power of a personal computer becomes more and more powerful. In the end, mainframe computers are almost phased out in the 1990s. A powerful desktop computer called server replaced the old mainframe and workstation. In the end, IBM had to restructured her business focus. Digital Equipment Corporation (DEC) was then acquired by Compag and then HP.

2.2 Word Processing Software (1980s)

In the earlier 1990s, there were many word processing software for use. All those software were running on Microsoft DOS for IBM Compatible PC, including WordStar (released for DOS in 1982), WordPerfect (released for DOS in 1982) and Microsoft Word (initially released in 1983). In the end, Microsoft Word becomes the dominated word processing software. The word format becomes a dominant format for documents.

2.3 Search Engine (1990s)

In the middle of 1990s, at least ten searching engines had been launched. Yahoo searching engine was the first one launched in 1994. Afterward, other searching engines were launched and their profit-making business models followed Yahoo. In the late 1990s, before Goolge launched her searching engine, Yahoo became the most popular searching engine at that time. Other searching engines failed.

2.4 SCM, CRM & E-Marketplace (1990s)

In the 1990s, many startups had developed web-based application systems for supply chain management (SCM). Two notable technical firms were iLog and i2. Both firms had developed powerful tools for solving those problems in supply chain management. In that period time, SAP had already been working on SCM software for a long time. However, SAP was not targeting on SME. iLog and i2 targeted on the SME segment. In the end, iLog was acquired by IBM and i2 filed bankruptcy.

Again in the 1990s, many electronic marketplaces had been launched. Some notable emarketplaces were Alibaba, Amazon, Ariba, Commerce One and eBay. Ariba and Commerce One developed new technologies for gathering suppliers and business customers. Moreover, new technologies

were developed for B2B contract bargaining and settlement; production tracking and contract fulfillment. Ariba and Commerce One had even developed protocols for these B2B SCM and CRM systems. In the end, Ariba is now a part of SAP. Commerce One was obsolete.

3 Generative AI Tools Competition

It is clear to me that generative AI tools have been undergone yet another competition. It is similar to the situation that I have witnessed in the last three decades. While those tools are with very advance technology, their survivals are in doubt.

3.1 Winners-Take-All: Only a few will survive

From the above stories, one should note that technology advancement is just one factor for the sustainable of a firm. Sometimes, this factor could also been ignored. Competition among the firms with similar products and the worldwide economic situation are also critical. Usually, at most one winner can survive in the competition. eBay is the winner in the auction-based e-marketplace. Alibaba, Amazon and Shopee are now the winners in the C2C and B2C e-marketplaces.

3.2 Obsolete or Being Acquired: Users are the key

To predict which generative AI firms will survive after 5 years, one question is on the number of users who engage in the use of the tools. Getting users to use a particular tool is not a simple problem. OpenAI is invested by Microsoft. Clearly, Microsoft would try to connect or bundle the tools to Microsoft Windows and Microsoft Office. For Google and Meta, I am not so sure how they can make money from their tools. For other generative AI firms, like Midjourney and Stability AI, I suspect that they will be acquired by the giants.