



Survey on AI-Related Inventions by JPO — Global filing trends — June 9, 2025

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Introduction

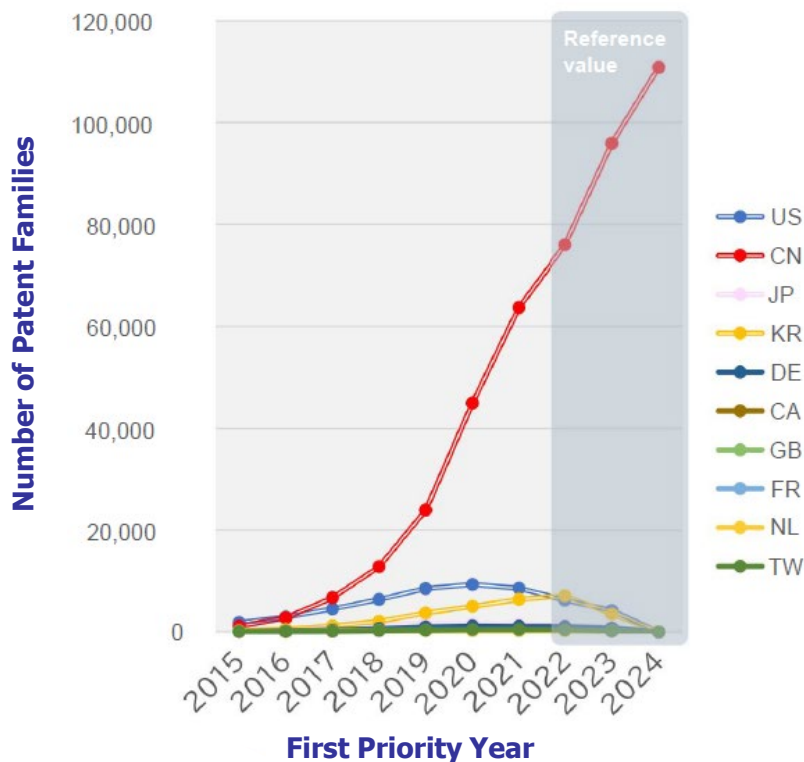
- In response to the recent surge in AI-related patent applications, the Japan Patent Office (JPO) has carried out a survey on international filing trends, including those in Japan.
- A summary of the survey results can be found at the following link (available in Japanese only).
https://www.jpo.go.jp/resources/report/gidou-houkoku/tokkyo/document/index/2025_report_ai.pdf
- This material contains selected key findings from the survey and includes English translations prepared by ITOH Patent Attorney Corporation.

Trends on AI-related Inventions (IPC: G06N*)

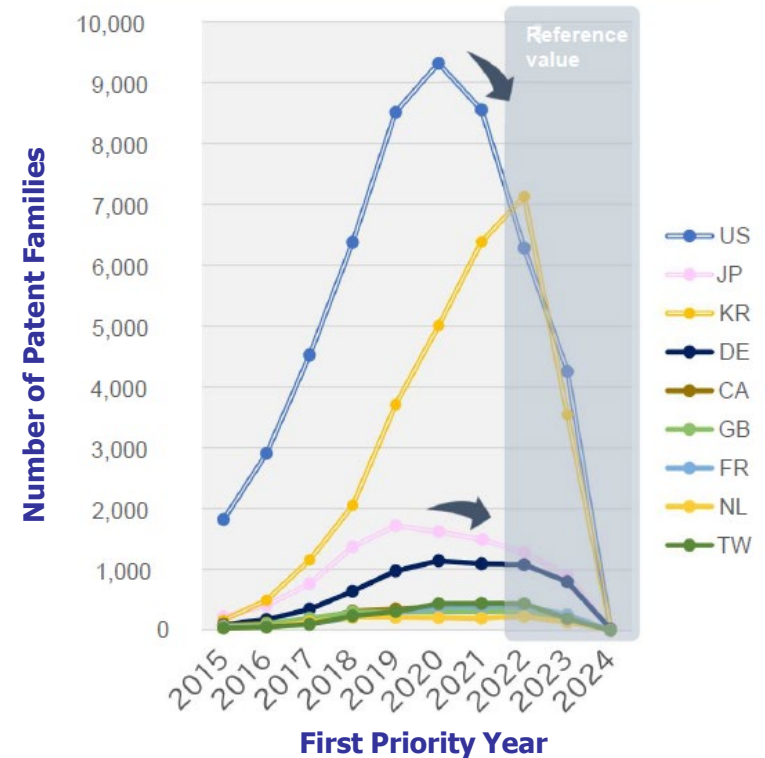
Annual filing trends by major countries/regions (1)

* Target applications: Applications assigned with **G06N**, the international patent classification related to AI.

Annual trends by major countries/regions



Annual trends by major countries/regions (other than China)





Trends on AI-related Inventions (IPC: G06N)

Annual filing trends by major countries/regions (2)

- Globally, China is showing remarkable momentum.
- Regarding the United States, there has been a downward trend since the peak in 2020, and although the data is for reference only, Korea is estimated to have surpassed the U.S. in 2022.
- Japan has been gradually declining since its peak in 2019, and there is a possibility that its ranking may be overtaken by Germany.

Trends on AI-related Inventions (IPC: G06N)

Ranking of Right Holders (1)

Entire period			2020-2024			2015-2019		
#	Rights holder	Number of patent families	#	Rights holder	Number of patent families	#	Rights holder	Number of patent families
1	IBM	5,420	1	TENCENT TECH SHENZHEN	4,618	1	IBM	2,722
2	TENCENT TECH SHENZHEN	5,301	2	STATE GRID	4,481	2	MICROSOFT TECH LICENSING	1,468
3	STATE GRID	5,278	3	ZHEJIANG UNIVERSITY ZJU	4,176	3	SAMSUNG ELECTRONICS	1,388
4	ZHEJIANG UNIVERSITY ZJU	4,774		BEIJING BAIDU NETCOM SCIENCE AND 4 TECH	3,869	4	GOOGLE	991
	BEIJING BAIDU NETCOM SCIENCE AND 5 TECH	4,416	5	TSINGHUA UNIVERSITY	3,064	5	INTERNATIONAL BUSINESS MACHINES	842
6	SAMSUNG ELECTRONICS	3,984		UNIVERSITY OF ELECTRONIC SCIENCE 6 AND TECH OF CHINA	3,033	6	INTEL	813
	UNIVERSITY OF ELECTRONIC SCIENCE 7 AND TECH OF CHINA	3,730	7	XIDIAN UNIVERSITY	2,774	7	STATE GRID	785
8	TSINGHUA UNIVERSITY	3,537	8	CHINA MOBILE COMMUNICATIONS GROUP	2,740	8	FUJITSU	710
9	PING AN TECHSHENZHEN	3,300	9	IBM	2,698	9	NEC	687
10	XIDIAN UNIVERSITY	3,240	10	PING AN TECH SHENZHEN	2,680		UNIVERSITY OF ELECTRONIC SCIENCE 10 AND TECH OF CHINA	687
11	CHINA MOBILE COMMUNICATIONS GROUP	2,931	11	SAMSUNG ELECTRONICS	2,596	11	TENCENT TECH SHENZHEN	679
12	SOUTHEAST UNIVERSITY	2,902	12	BEIHANG UNIVERSITY	2,478	12	PING AN TECH SHENZHEN	620
13	BEIHANG UNIVERSITY	2,829	13	SOUTHEAST UNIVERSITY	2,475	13	HUAWEI TECH	605
14	MICROSOFT TECH LICENSING	2,787	14	HANGZHOU DIANZI UNIVERSITY	2,435	14	LG ELECTRONICS	567
15	HUAWEI TECH	2,762	15	BEIJING INSTITUTE OF TECH BIT	2,384	15	ZHEJIANG UNIVERSITY ZJU	554
16	TIANJIN UNIVERSITY	2,755		CHONGQING UNIVERSITY OF POST AND 16 TELECOMMUNICATIONS	2,233		BEIJING BAIDU NETCOM SCIENCE AND 16 TECH	547
17	HANGZHOU DIANZI UNIVERSITY	2,747	17	TIANJIN UNIVERSITY	2,218	17	TIANJIN UNIVERSITY	528
18	SOUTH CHINA UNIVERSITY OF TECH SCUT	2,701		INDUSTRIAL AND COMMERCIAL BANK OF 18 CHINA	2,217	18	SOUTH CHINA UNIVERSITY OF TECH SCUT	526
19	BEIJING INSTITUTE OF TECH BIT	2,636		NANJING UNIVERSITY OF POSTS AND 19 TELECOMMUNICATIONS	2,209	19	TSINGHUA UNIVERSITY	470
20	ZHEJIANG UNIVERSITY OF TECH ZJUT	2,580	20	SOUTH CHINA UNIVERSITY OF TECH SCUT	2,169	20	GUANGDONG UNIVERSITY OF TECH	468



Trends on AI-related Inventions (IPC: G06N)

Ranking of Right Holders (2)

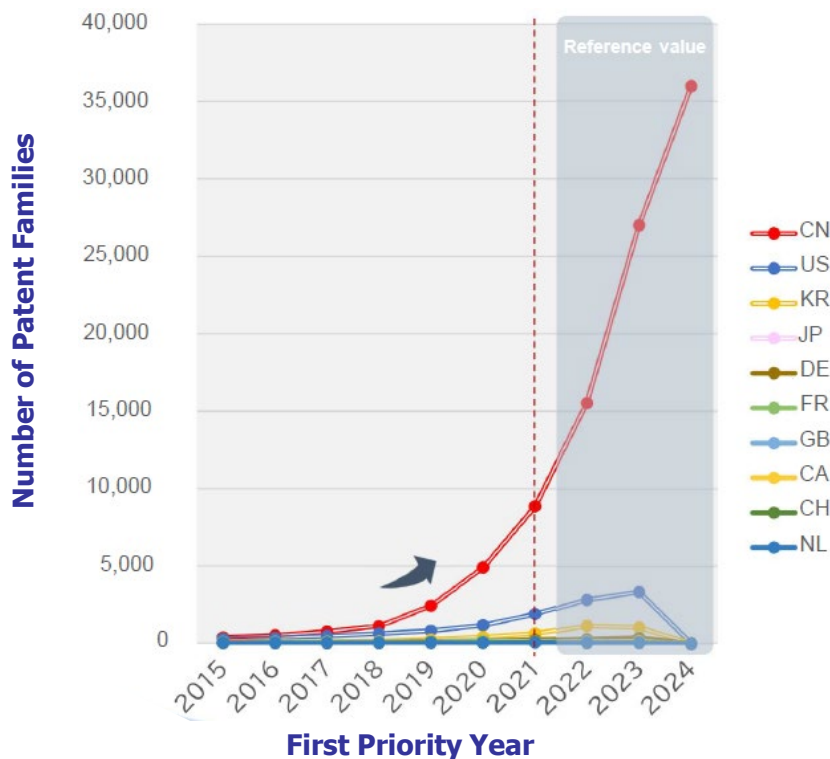
- Looking at the entire period, IBM holds the top position, but the upper ranks are dominated by Chinese companies.
- 6 to 10 years ago, Japanese companies such as Fujitsu and NEC were among the top 10, and U.S. companies, led by IBM, were taking the lead.
- In the past five years, Chinese companies—led by Tencent—have risen to the top tier.

Trends on AI-related Inventions (Transformer*)

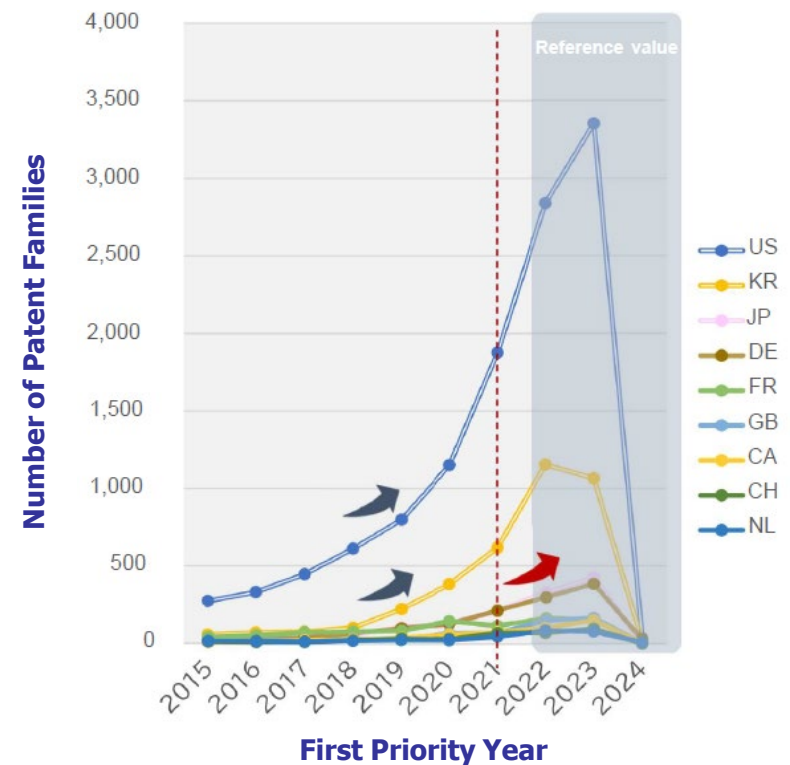
Annual filing trends by major countries/regions (1)

* Target applications: Applications related to **Transformer**, retrieved through a special keyword search formula by JPO

Annual trends by major countries/regions



Annual trends by major countries/regions (other than China)



Trends on AI-related Inventions (Transformer*)

Annual filing trends by major countries/regions (2)

- The top three countries are China, the United States, and Korea.
- A key characteristic of this field is that all major countries—China, U.S., Korea, Japan, and Germany—are showing an upward trend.
- Japan and Germany appear to have started their growth phase several years later than the other countries.

Trends on AI-related Inventions (Transformer*)

Ranking of Right Holders (1)

Entire period			2020-2024			2015-2019			
#	Rights holder	Number of patent families	#	Rights holder	Number of patent families	#	Rights holder	Number of patent families	
1	STATE GRID	3,477	1	STATE GRID	2,691	1	STATE GRID	772	US
2	TENCENT TECH SHENZHEN	2,547	2	TENCENT TECH SHENZHEN	2,437	2	AT&T INTELLECTUAL PROPERTY I	180	CN
3	GUANGDONG POWER GRID	1,769	3	GUANGDONG POWER GRID	1,719	3	PANASONIC INTELLECTUAL PROPERTY	180	KR
	BEIJING BAIDU NETCOM SCIENCE AND 4 TECH	1,325		BEIJING BAIDU NETCOM SCIENCE AND 4 TECH	1,269	4	MICROSOFT TECH LICENSING	105	JP
5	PING AN TECH SHENZHEN	1,135	5	PING AN TECH SHENZHEN	1,102	5	TENCENT TECH SHENZHEN	105	DE
6	ZHEJIANG UNIVERSITY ZJU	1,023	6	ZHEJIANG UNIVERSITY ZJU	947	6	LG ELECTRONICS	103	
7	GOOGLE	900	7	GOOGLE	813		CHINA ELECTRIC POWER RESEARCH 7 INSTITUTE	98	
8	MICROSOFT TECH LICENSING	857	8	MICROSOFT TECH LICENSING	752	8	SAMSUNG ELECTRONICS	93	
9	TSINGHUA UNIVERSITY	750	9	TSINGHUA UNIVERSITY	717	9	STATE GRID JIANGSU ELECTRIC POWER	92	
	CHINA ELECTRIC POWER RESEARCH 10 INSTITUTE	739	10	CHINA MOBILE COMMUNICATIONS GROUP	677	10	CANON MEDICAL SYSTEMS	89	
11	SAMSUNG ELECTRONICS	718	11	HUAWEI TECH	649	11	STATE GRID SHANGHAI ELECTRIC POWER	88	
12	HUAWEI TECH	691		CHINA ELECTRIC POWER RESEARCH 12 INSTITUTE	641	12	GOOGLE	87	
13	CHINA MOBILE COMMUNICATIONS GROUP	679	13	SAMSUNG ELECTRONICS	625	13	INTEL	76	
14	STATE GRID JIANGSU ELECTRIC POWER	622	14	ALIPAY HANGZHOU INFORMATION TECH	574	14	NORTH CHINA ELECTRIC POWER UNIVERSITY	72	
15	ALIPAY HANGZHOU INFORMATION TECH	587	15	STATE GRID JIANGSU ELECTRIC POWER	529	15	APPLE	61	
16	STATE GRID SHANGHAI ELECTRIC POWER	545	16	IFLYTEK	506	16	SIEMENS	60	
	UNIVERSITY OF ELECTRONIC SCIENCE 17 AND TECH OF CHINA	529		UNIVERSITY OF ELECTRONIC SCIENCE 17 AND TECH OF CHINA	496		BEIJING BAIDU NETCOM SCIENCE AND 17 TECH	56	
18	IFLYTEK	516	18	HANGZHOU DIANZI UNIVERSITY	490	18	STATE GRID ZHEJIANG ELECTRIC POWER	56	
19	HANGZHOU DIANZI UNIVERSITY	502		CHONGQING UNIVERSITY OF POST AND 19 TELECOMMUNICATIONS	478	19	ZHEJIANG UNIVERSITY ZJU	54	
20	WUHAN UNIVERSITY	495		BEIJING UNIVERSITY OF POSTS AND 20 TELECOMMUNICATIONS	468	20	HITACHI	51	

Trends on AI-related Inventions (Transformer*)

Ranking of Right Holders (2)

- STATE GRID has maintained the top position for the past 10 years.
- U.S. companies such as GOOGLE and MICROSOFT, and Korea's SAMSUNG, have continued to demonstrate a strong presence.
- Japanese companies like PANASONIC, CANON MEDICAL, and HITACHI have ranked in during past years.



Thank you!

Should you have any question regarding any Japanese IP practice issue, please do not hesitate to contact us (itohpat@itohpat.co.jp). ITOH is always pleased to assist you and your colleagues!