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AI-Driven Innovation in Medical Technologies Webinar Series

Patent Landscape and Trends

January 22, 2026

Panel



Marvin Beekman

Principal and Patent Attorney at SLW



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Principal and Patent Attorney at SLW

AI-Driven Innovation in Medical Technologies Webinar Series

- Episode 1: Patent Landscape and Trends (January 22, 2026)
- Episode 2: Patent Eligibility Challenges (February 19, 2026)
- Episode 3: More info coming soon

MedTech Domains Overview

Domain	Definition	AI Types	Example
Predictive Analytics & Risk Management	Forecast outcomes, manage risk	Supervised ML, deep learning, federated learning	Predict readmission risk from EHR and vitals
Diagnostics & Imaging	Disease detection and image interpretation	CNNs, ML, NLP	Flag fractures on X-rays, structure radiology notes
Personalized Medicine	Tailored therapies	Multimodal models, knowledge graphs, RL	Recommend oncology regimen based on genetics

MedTech Domains Overview

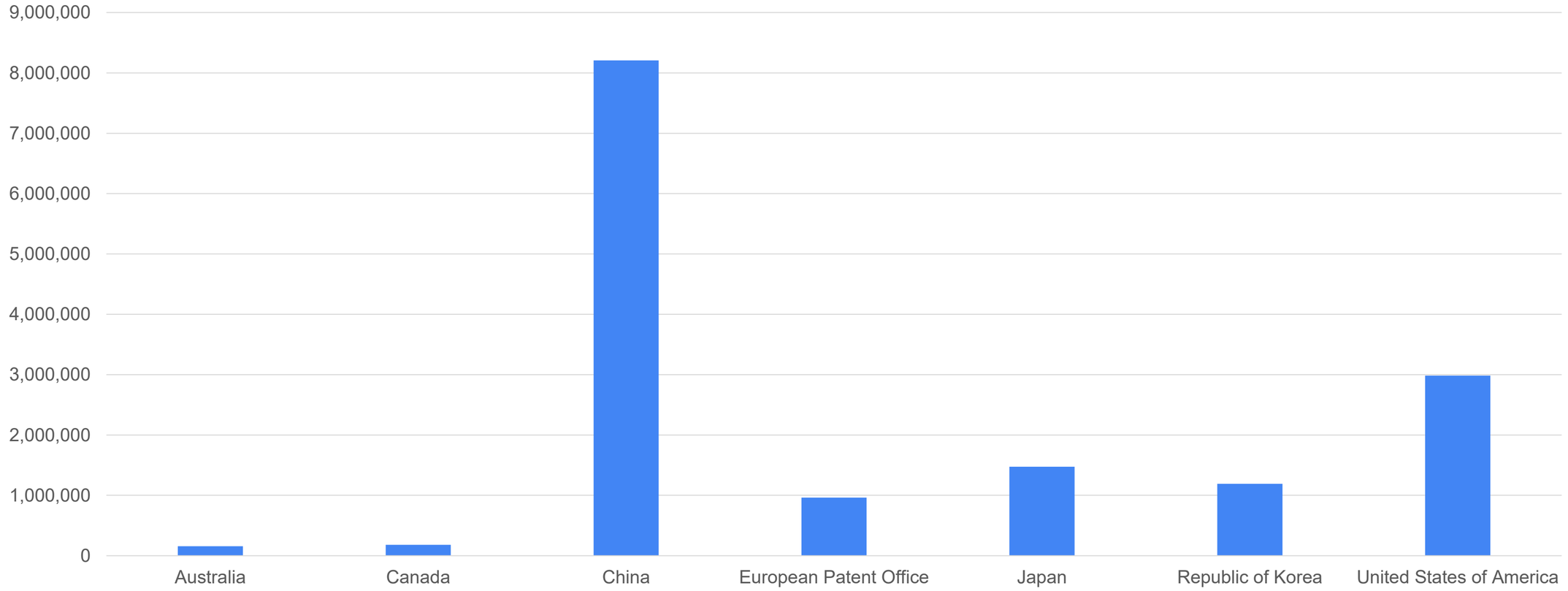
Domain	Definition	AI Types	Example
Clinical Decision Support	Assist with diagnoses and treatment	Rules+ML, NLP	Drug interaction alerts
Robotics & Surgery	Automated surgical guidance	Computer vision, control policies, sensor fusion	Robotic instrument positioning
Drug Discovery	Accelerate molecule discovery	Graph learning, predictive models, optimization	Screen compound libraries, adapt dose to response

MedTech Domains Overview

Domain	Definition	AI Types	Example
Remote Monitoring	Continuous patient tracking	Time-series, edge AI, anomaly detection	Wearable detects arrhythmia
NLP Extraction	Structure clinical text	LLMs, entity extraction, summarization	Extract symptoms from notes
Admin Automation	Streamline workflows	NLP+ML, automation	Auto-summarize labs, schedule follow-ups

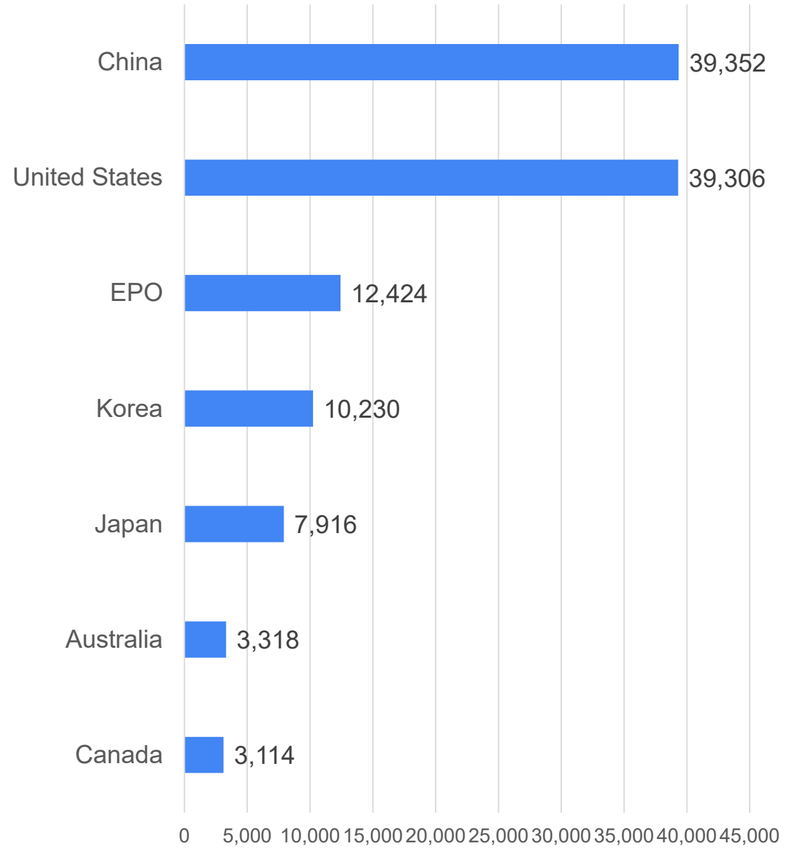
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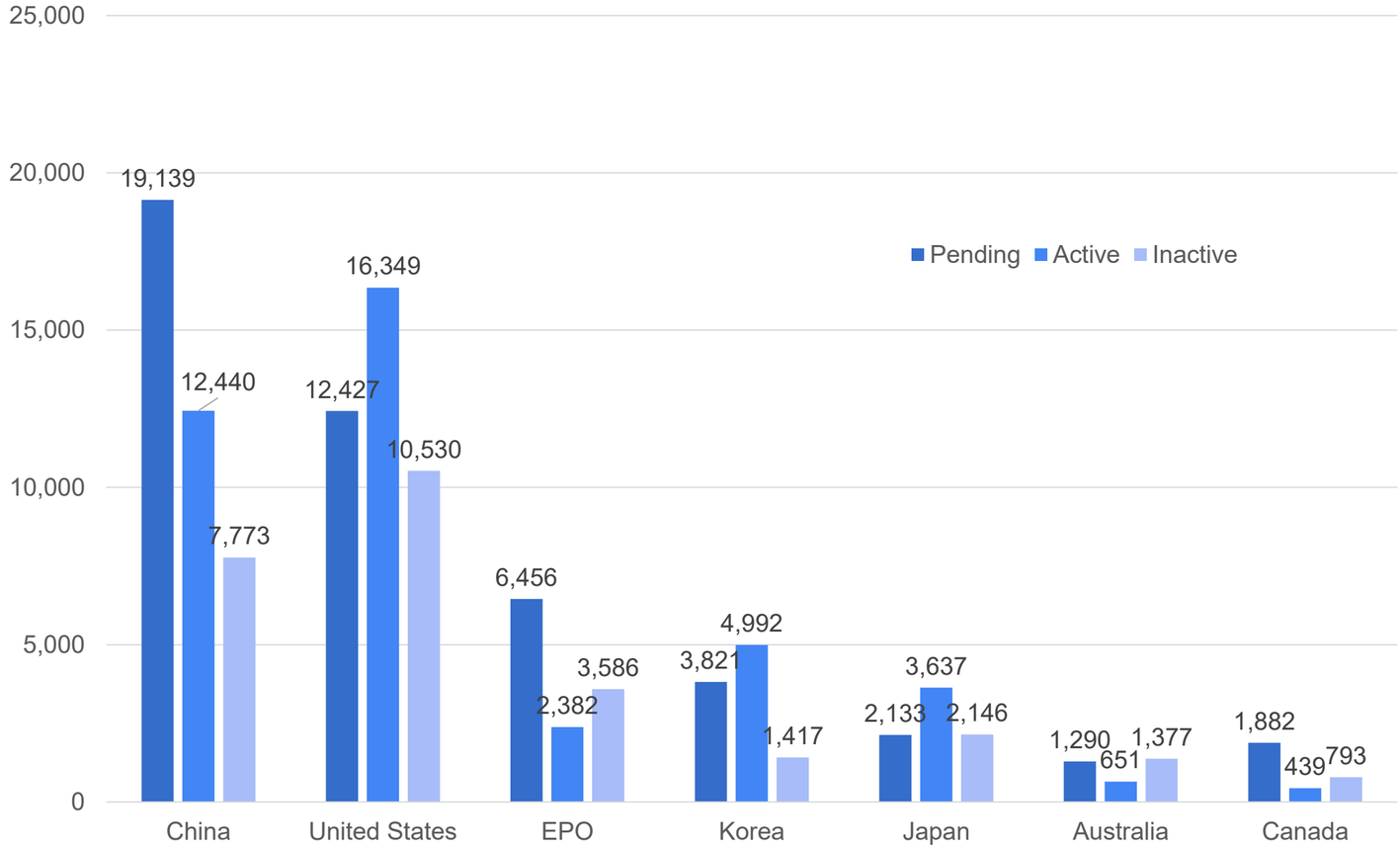
Total Patents Filed Since 2000 (WIPO)



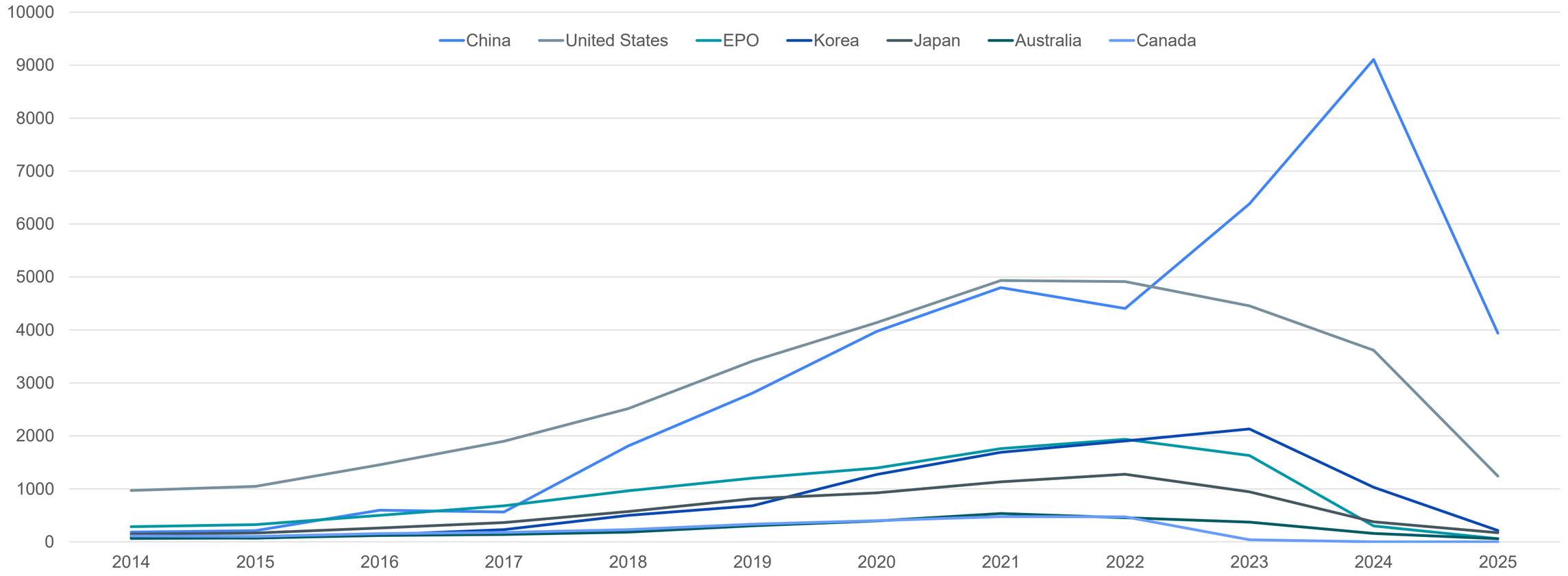
Predictive Analytics & Risk Management

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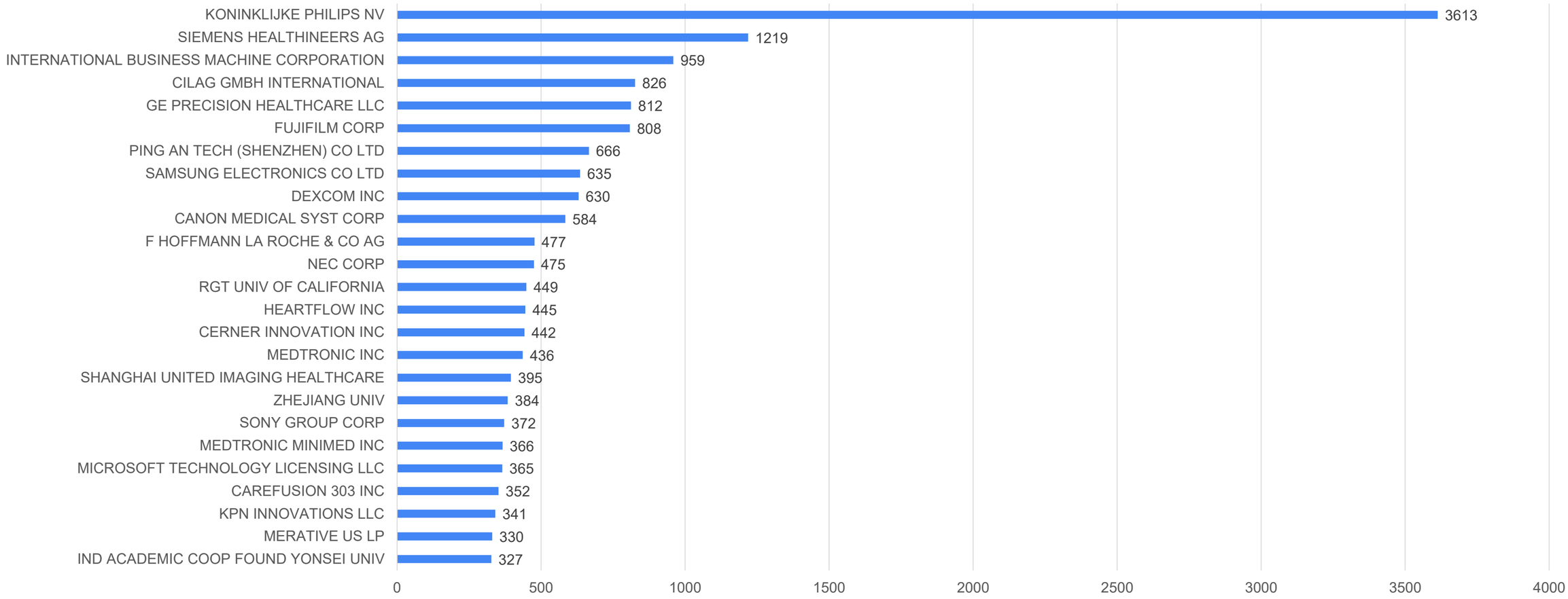




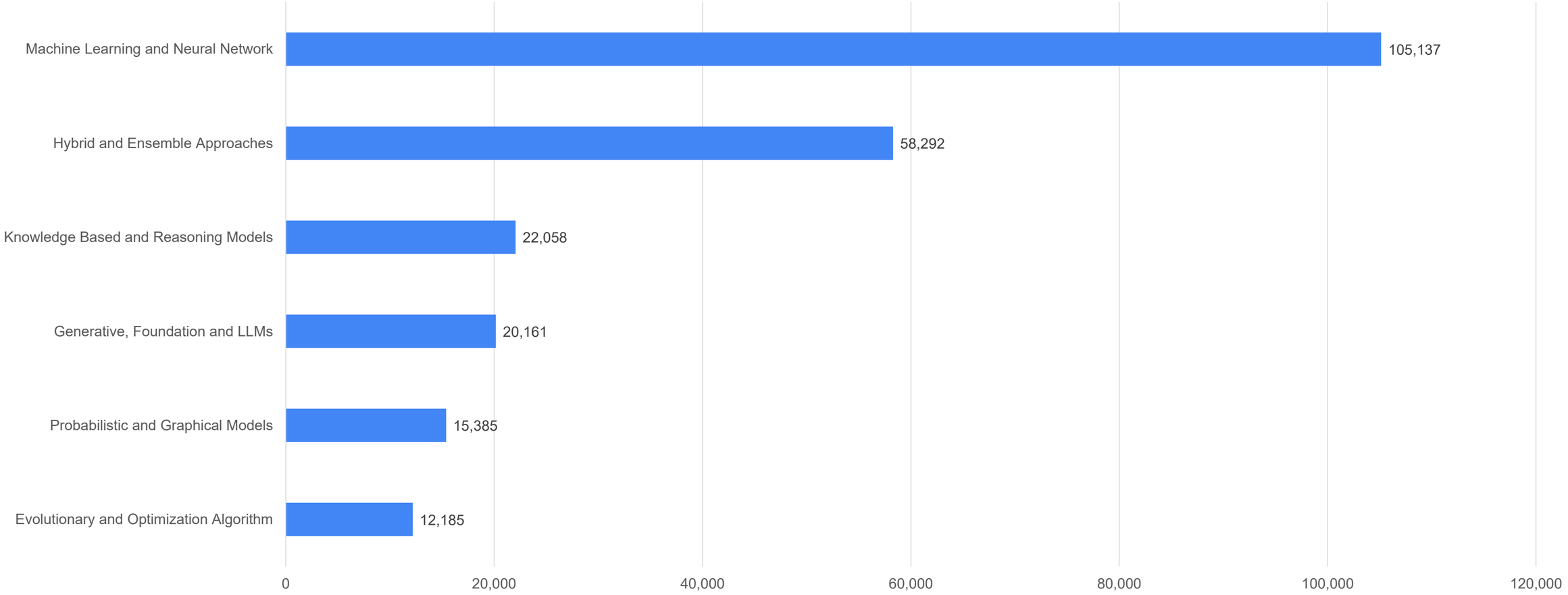
Authority/Filing Year Trend



Top Assignees



AI Categorization Comparison

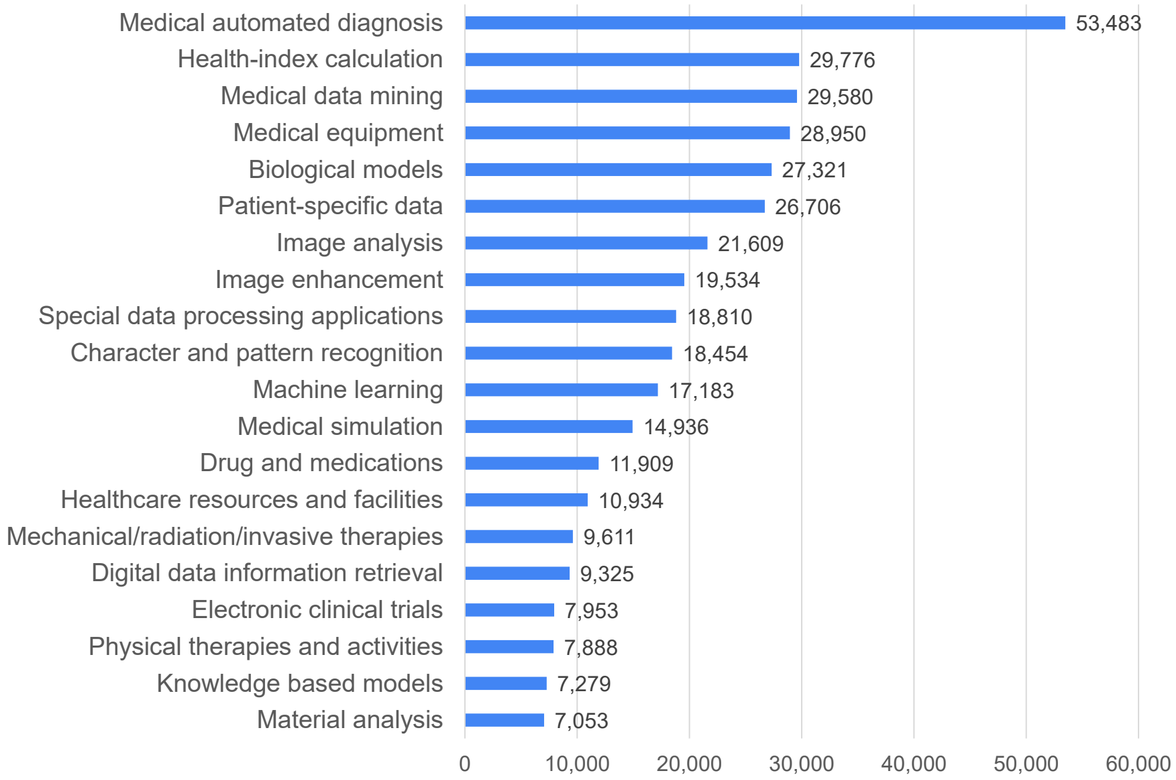


Top Application Domains

Application Domain Defined

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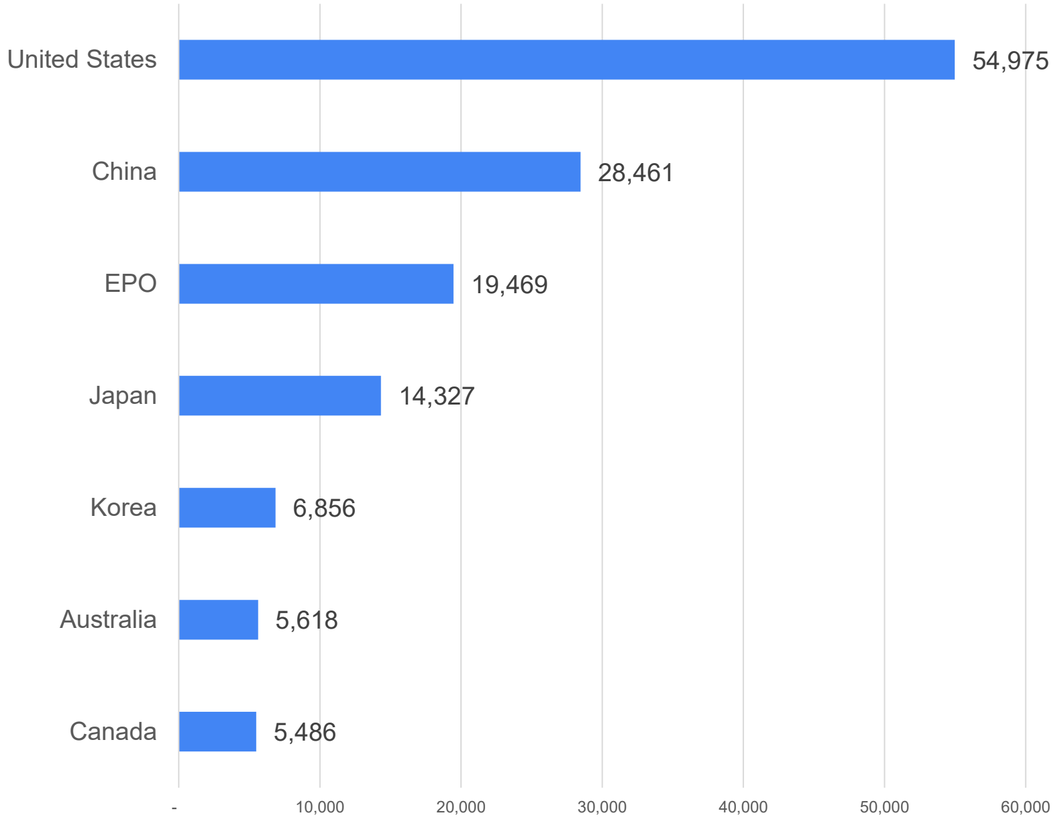


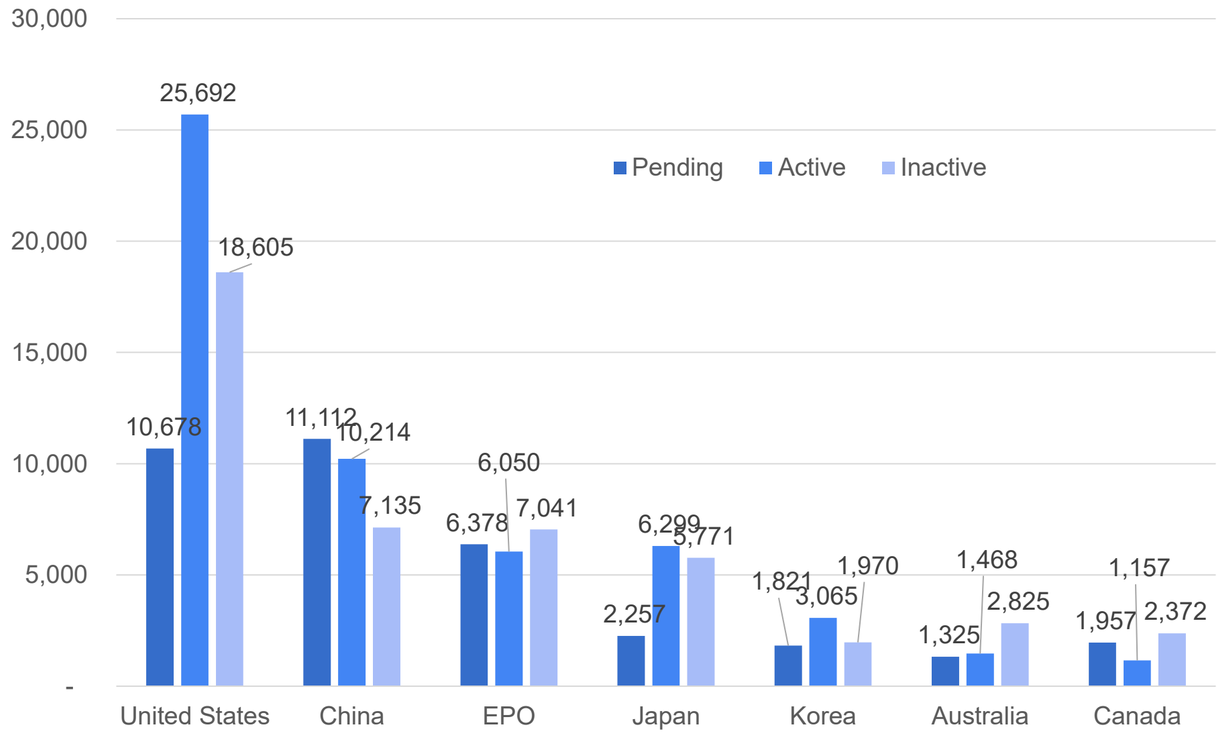
Application Domain/Filing Year Matrix

Application Domain / Filing Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Medical automated diagnosis	1,488	1,899	3,075	4,715	6,477	7,968	7,912	7,554	5,408	1,980
Health-index calculation	699	1,174	1,715	2,562	3,199	3,906	4,071	4,113	4,036	1,888
Medical data mining	517	906	1,647	2,183	3,199	4,110	4,213	4,342	4,457	2,032
Medical equipment	996	1,431	1,812	2,412	3,412	4,150	4,014	3,619	2,186	915
Biological models	191	483	1,340	2,558	3,597	4,138	3,751	4,081	4,725	2,076
Patient-specific data	737	898	1,474	1,999	2,805	3,252	3,422	3,861	3,555	1,272
Image analysis	438	781	1,405	2,151	2,840	3,415	3,208	2,951	2,421	908
Image enhancement	381	677	1,300	1,972	2,640	3,137	2,927	2,669	2,095	805
Special data processing applications	1,184	1,077	933	1,240	1,322	1,541	1,340	1,580	1,555	570
Character and pattern recognition	332	641	1,142	1,667	2,268	2,828	2,773	2,364	2,393	863
Machine learning	307	612	1,173	2,065	2,696	2,848	2,345	2,212	1,767	647
Medical simulation	570	689	913	1,211	1,808	2,009	2,018	1,894	1,384	462
Drug and medications	286	416	698	959	1,406	1,699	1,782	1,660	1,078	497
Healthcare resources and facilities	248	334	655	849	1,329	1,544	1,529	1,541	1,378	543
Mechanical/radiation/invasive therapies	194	208	668	874	1,087	1,537	1,561	1,390	924	440
Digital data information retrieval	260	280	533	933	1,068	1,236	1,133	1,310	1,309	473
Electronic clinical trials	181	257	390	547	928	1,168	1,083	1,204	881	316
Physical therapies and activities	246	304	465	648	876	1,093	1,124	1,024	877	391
Knowledge based models	170	273	403	750	888	864	692	768	1,159	640
Material analysis	370	414	466	586	645	828	785	709	465	194

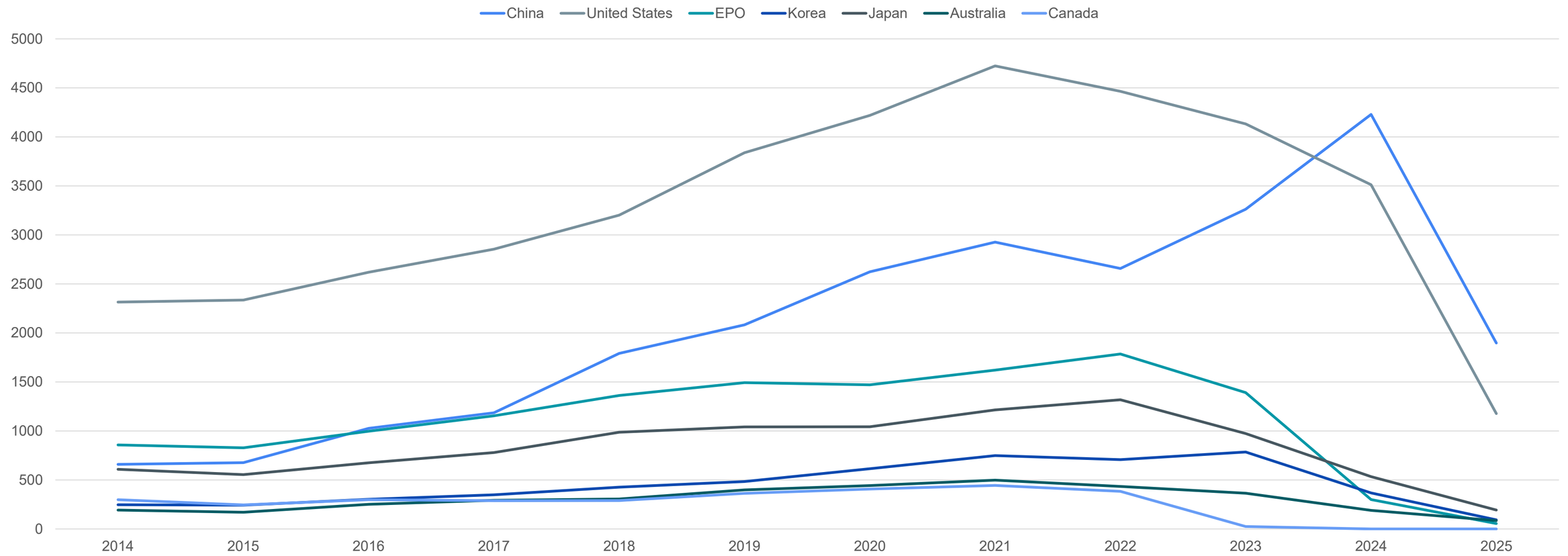
Diagnostics & Imaging

Authority/Status Comparison

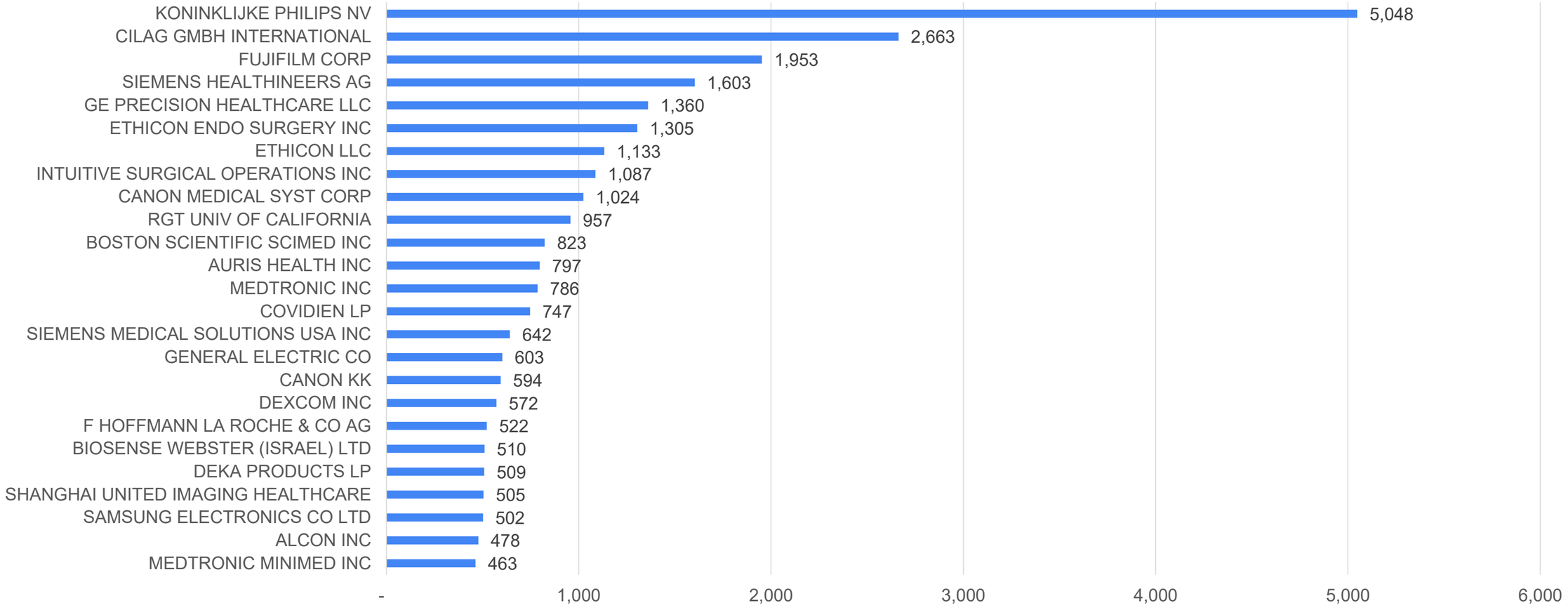




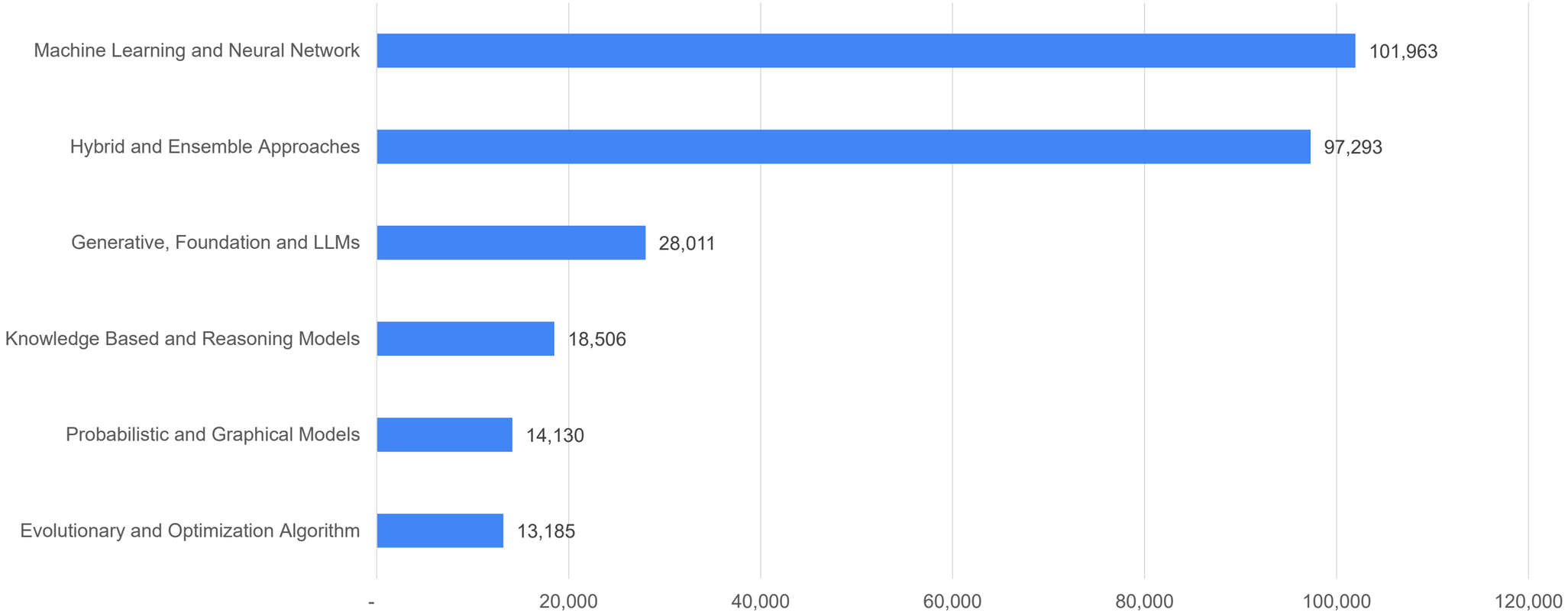
Authority/Filing Year Trend



Top Assignees



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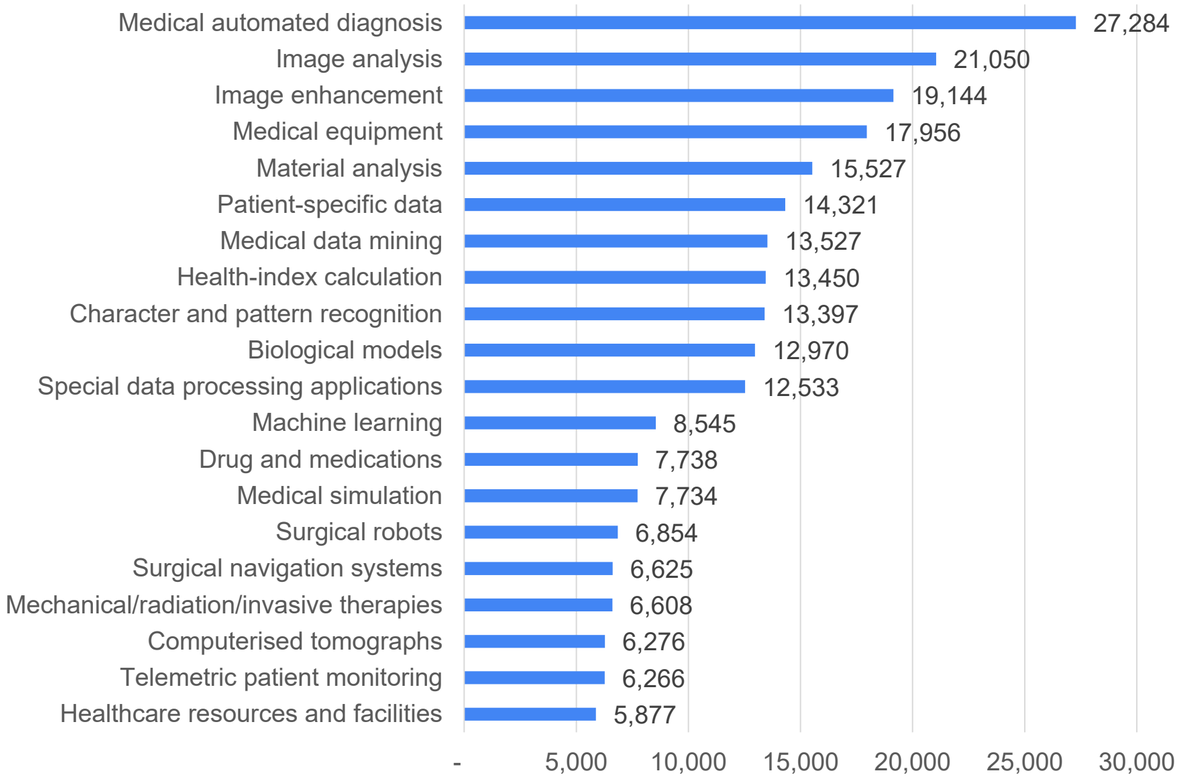


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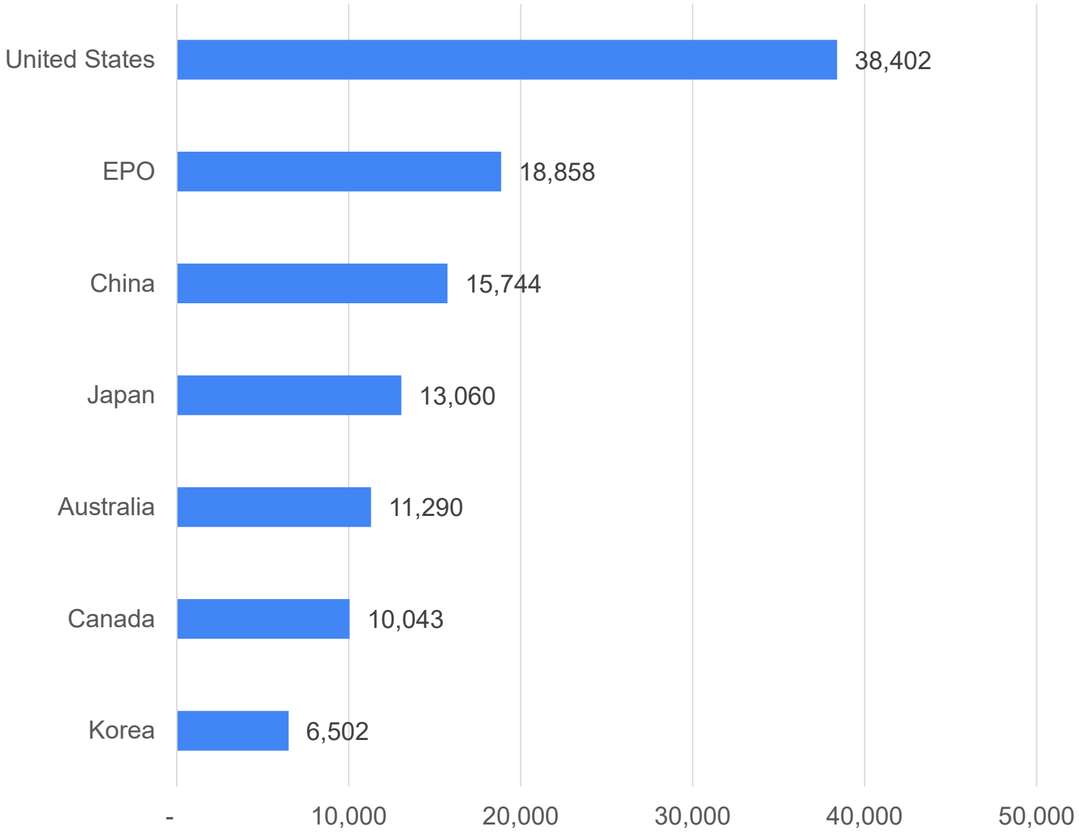


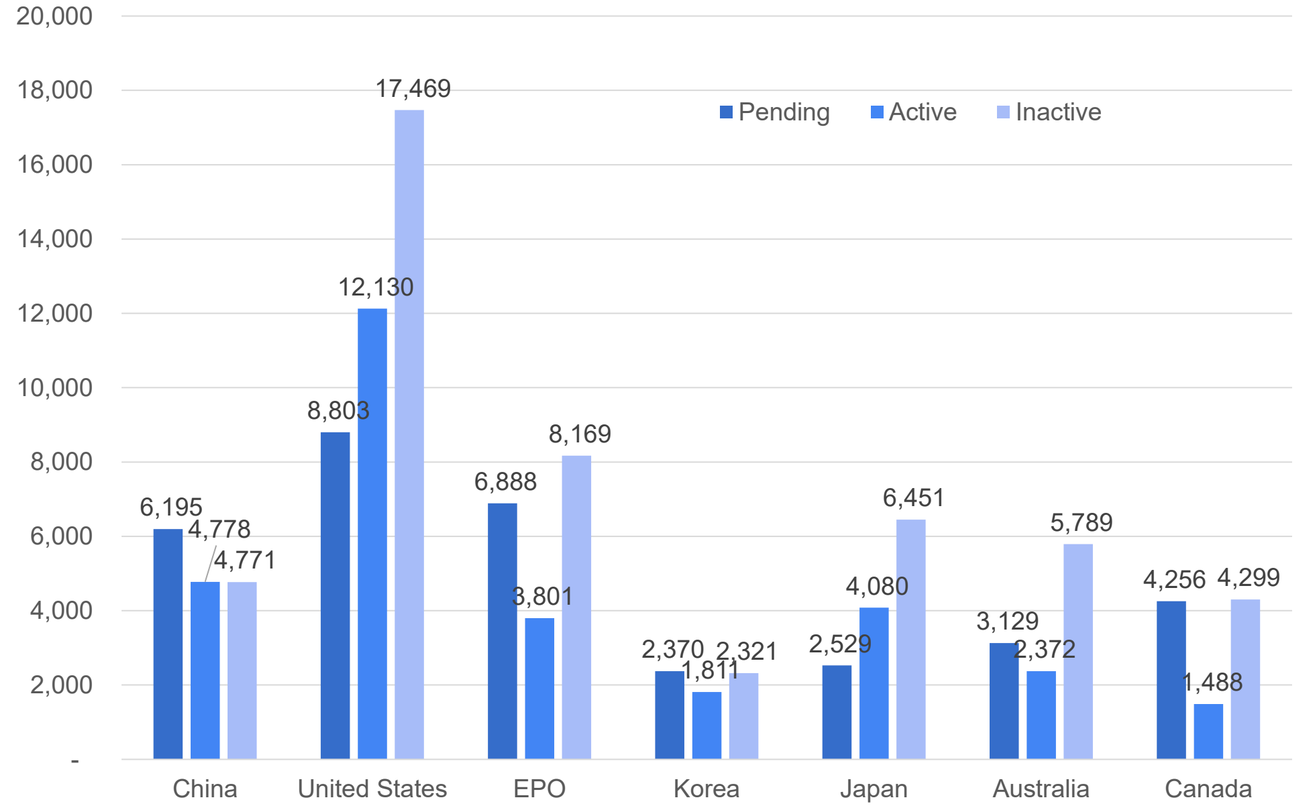
Application Domain/Filing Year Matrix

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Medical automated diagnosis	960	1,146	1,665	2,235	2,903	3,616	3,616	3,469	2,739	1,091
Image analysis	758	1,057	1,492	1,990	2,354	2,580	2,592	2,232	1,884	713
Image enhancement	675	951	1,354	1,827	2,186	2,401	2,394	2,028	1,674	640
Medical equipment	813	996	1,281	1,437	1,541	1,990	1,833	1,578	994	392
Material analysis	850	956	990	1,046	1,124	1,120	1,014	805	513	197
Patient-specific data	528	582	778	1,000	1,200	1,434	1,427	1,595	1,442	544
Medical data mining	267	470	790	1,022	1,298	1,873	1,912	1,938	1,800	825
Health-index calculation	440	765	975	1,126	1,239	1,589	1,628	1,605	1,415	689
Character and pattern recognition	422	660	803	1,070	1,316	1,593	1,671	1,343	1,333	547
Biological models	87	293	680	1,303	1,682	1,982	1,757	1,912	2,107	1,004
Special data processing applications	814	697	517	604	552	631	523	614	628	257
Machine learning	142	321	533	1,009	1,323	1,428	1,224	1,115	855	317
Drug and medications	321	339	403	531	668	831	923	769	487	223
Medical simulation	344	490	505	642	808	862	917	782	611	236
Surgical robots	276	331	796	725	678	830	752	558	352	149
Surgical navigation systems	314	399	537	749	656	707	703	475	380	166
Mechanical/radiation/invasive therapies	177	237	479	658	659	908	963	722	474	208
Computerised tomographs	294	409	474	499	490	463	529	494	311	106
Telemetric patient monitoring	387	399	431	494	531	548	461	374	226	118
Healthcare resources and facilities	182	264	395	473	623	737	690	591	521	196

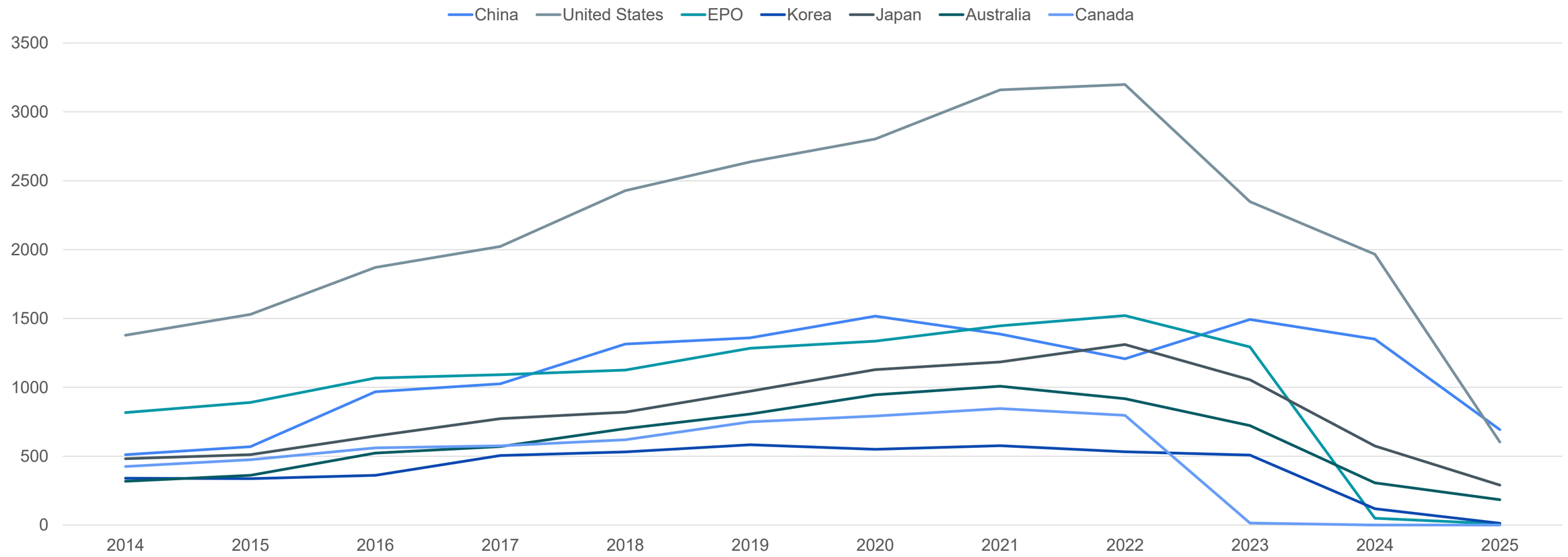
Personalized Medicine

Authority/Status Comparison

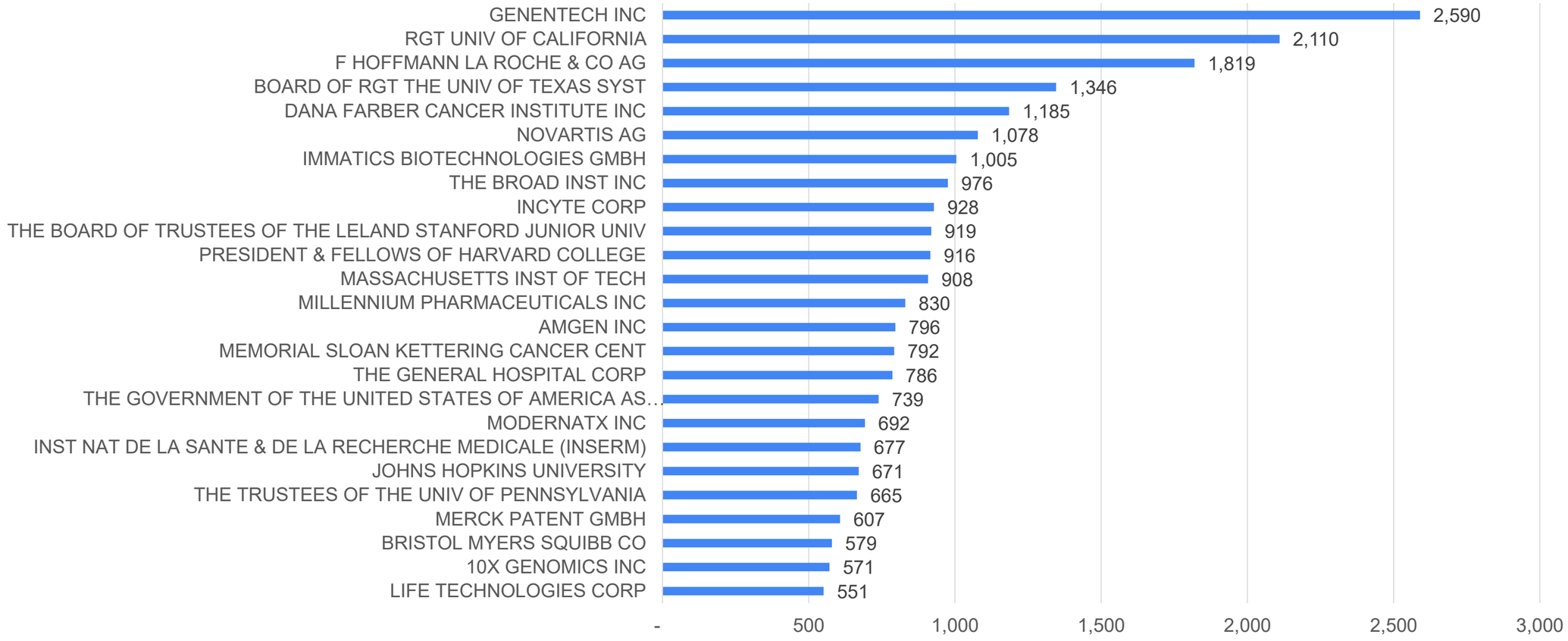




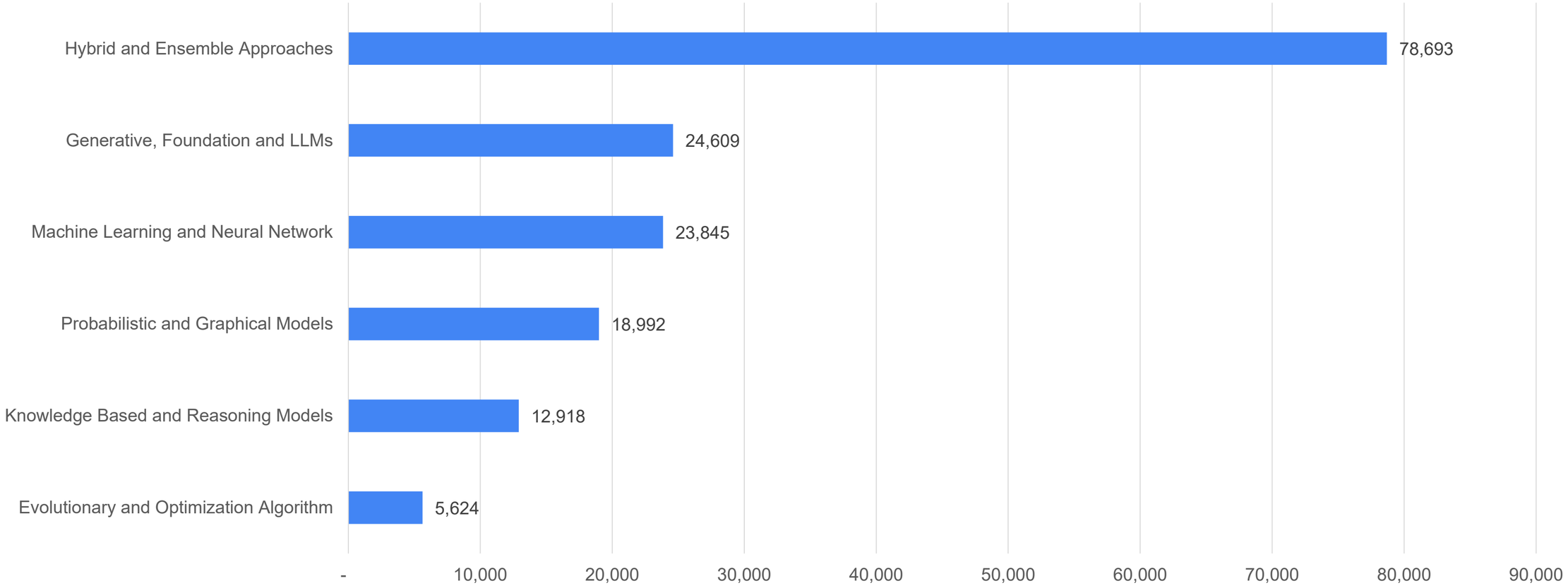
Authority/Filing Year Trend



Top Assignees



AI Categorization Comparison

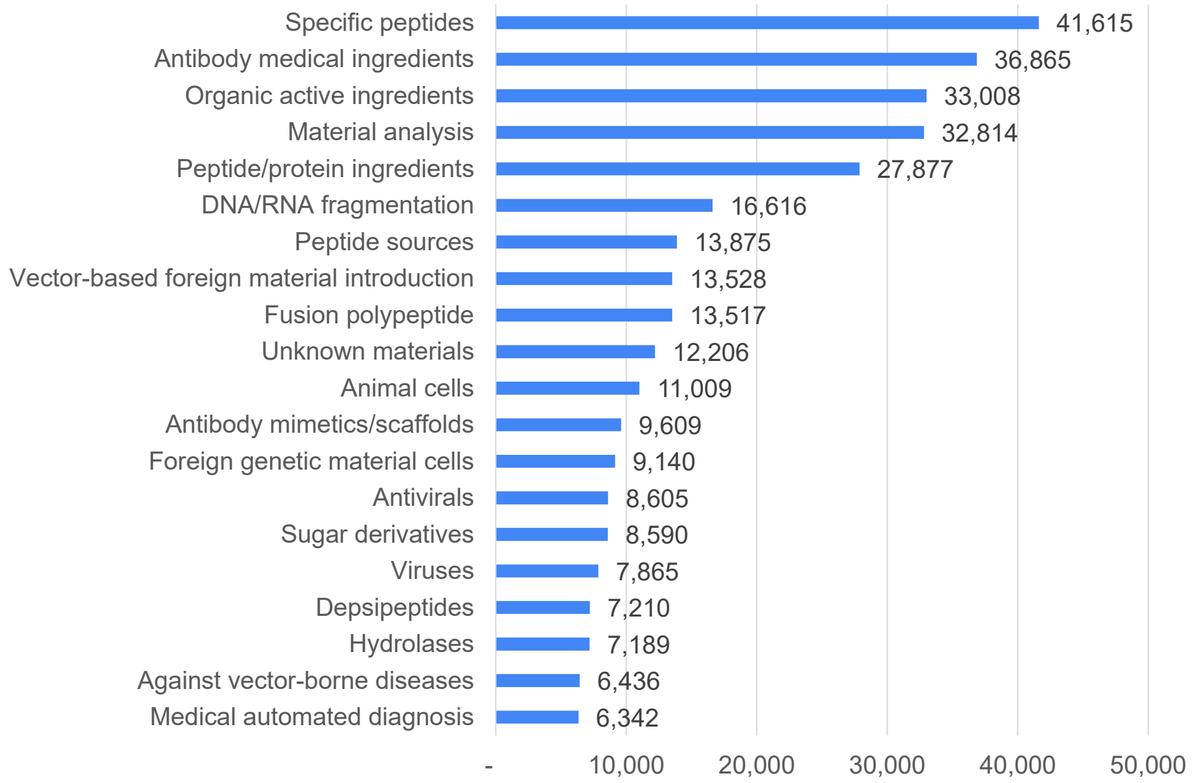


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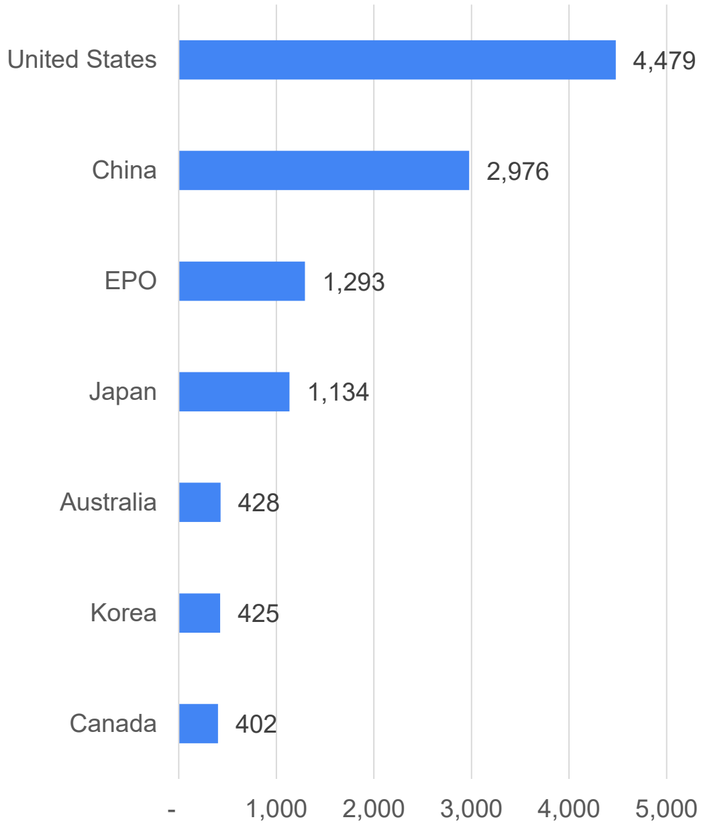


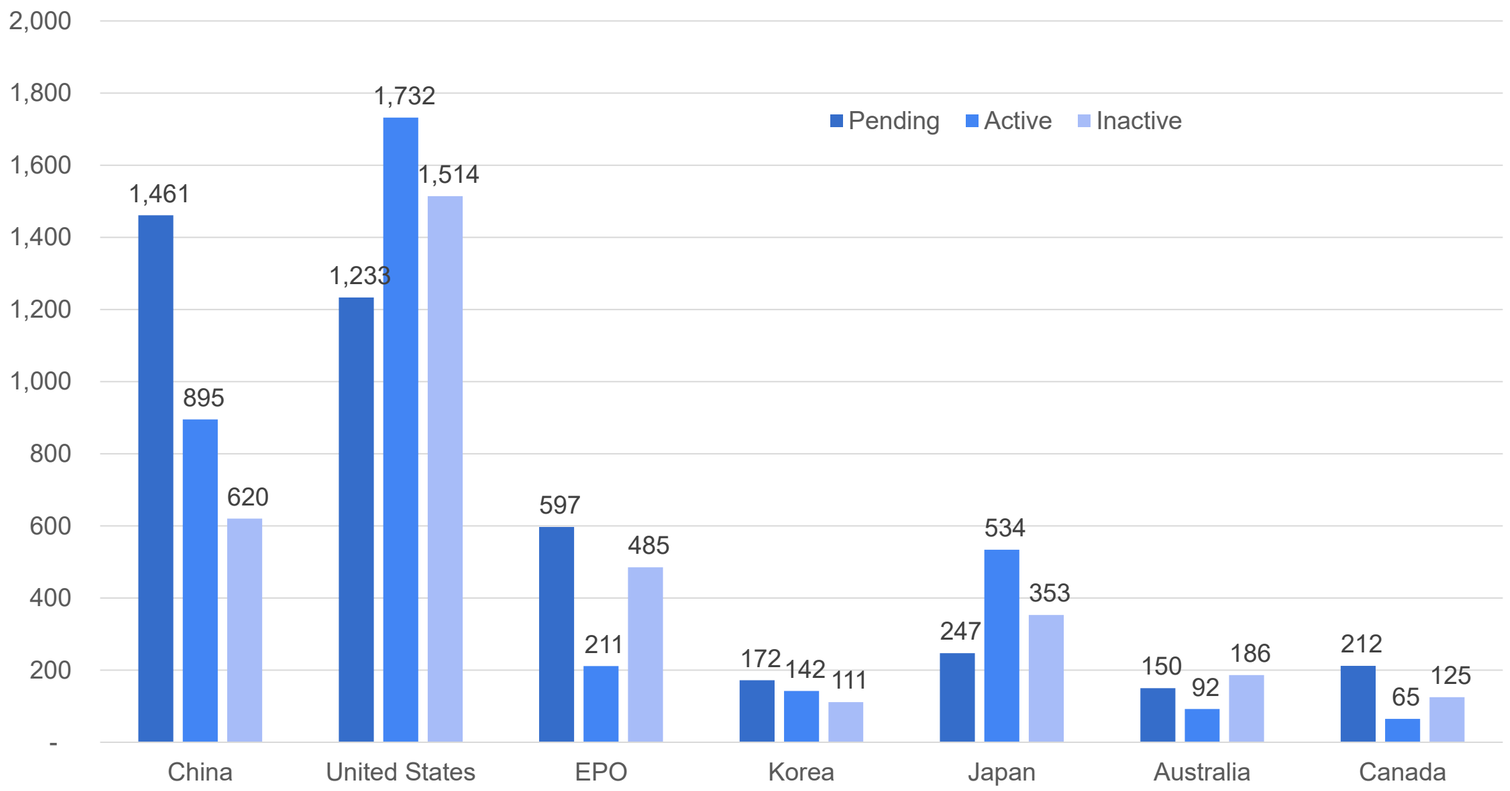
Application Domain/Filing Year Matrix

Application Domain / Filing Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Specific peptides	2,148	2,352	2,869	3,305	3,189	3,494	3,172	2,386	1,004	419
Antibody medical ingredients	2,074	2,294	2,716	3,029	3,006	3,379	3,038	2,228	963	393
Organic active ingredients	2,069	2,168	2,335	2,844	2,867	2,689	2,640	1,887	921	380
Material analysis	1,558	1,693	1,880	1,719	1,846	1,910	1,852	1,266	661	318
Peptide/protein ingredients	1,257	1,271	1,604	1,852	1,909	1,809	1,589	1,051	578	217
DNA/RNA fragmentation	1,072	921	1,275	1,277	1,476	1,382	1,491	1,070	622	234
Peptide sources	615	588	606	702	756	829	824	517	231	91
Vector-based foreign material introduction	687	816	1,012	1,086	1,282	1,168	1,282	1,036	446	187
Fusion polypeptide	743	718	1,167	1,223	1,224	1,441	1,231	814	392	145
Unknown materials	734	901	1,157	1,223	1,320	1,280	1,330	816	401	142
Animal cells	678	638	911	1,012	1,199	1,102	1,249	764	340	148
Antibody mimetics/scaffolds	609	489	796	817	731	817	705	467	243	101
Foreign genetic material cells	339	305	438	473	514	493	511	465	218	104
Antivirals	400	371	351	511	565	843	652	348	152	52
Sugar derivatives	222	211	202	193	188	146	113	82	52	23
Viruses	331	517	494	693	625	778	921	626	223	82
Depsipeptides	253	228	311	347	329	397	355	236	103	52
Hydrolases	321	408	570	529	690	636	566	473	217	88
Against vector-borne diseases	434	416	480	445	477	606	358	299	125	59
Medical automated diagnosis	241	295	397	505	711	796	879	852	666	273

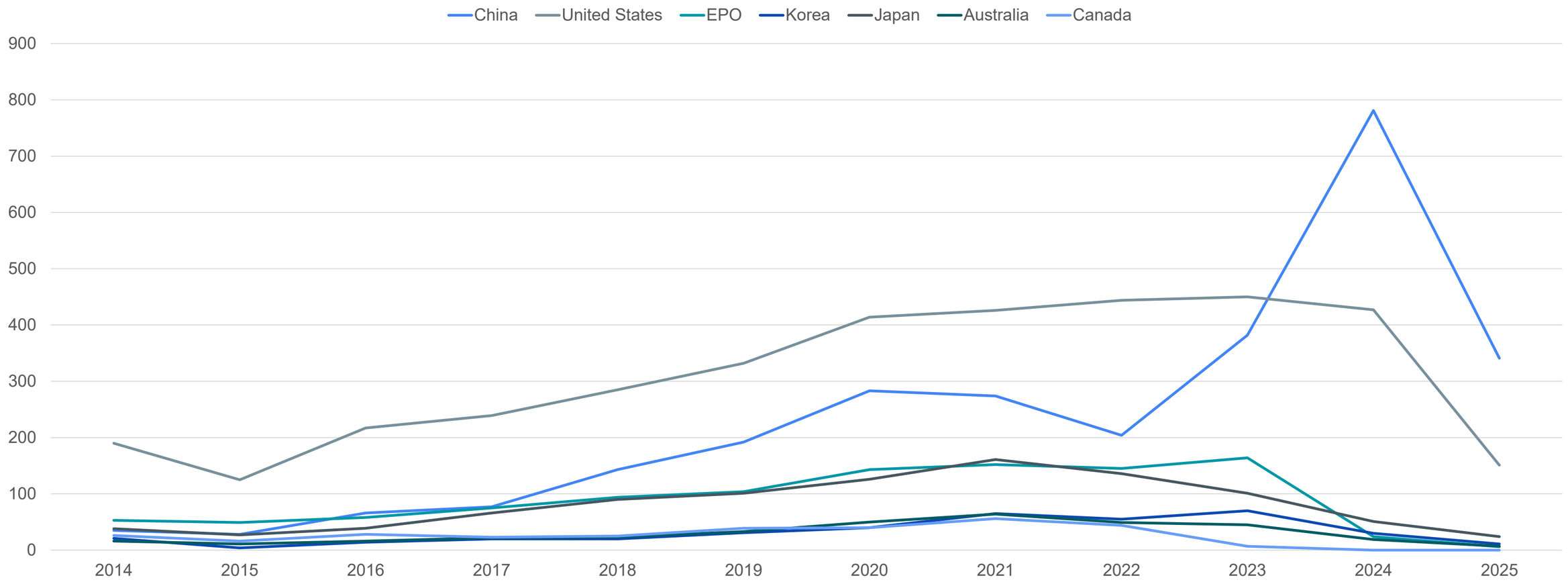
Clinical Decision Support

Authority/Status Comparison

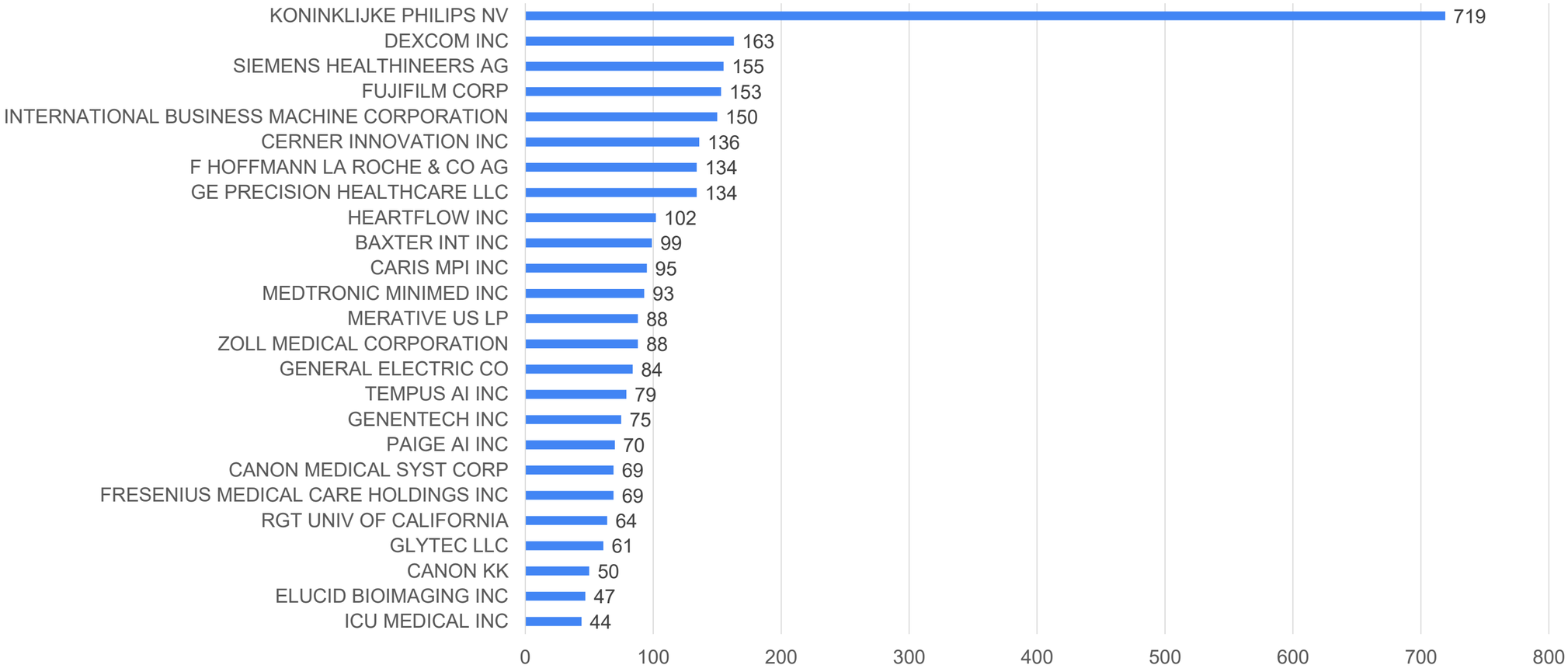




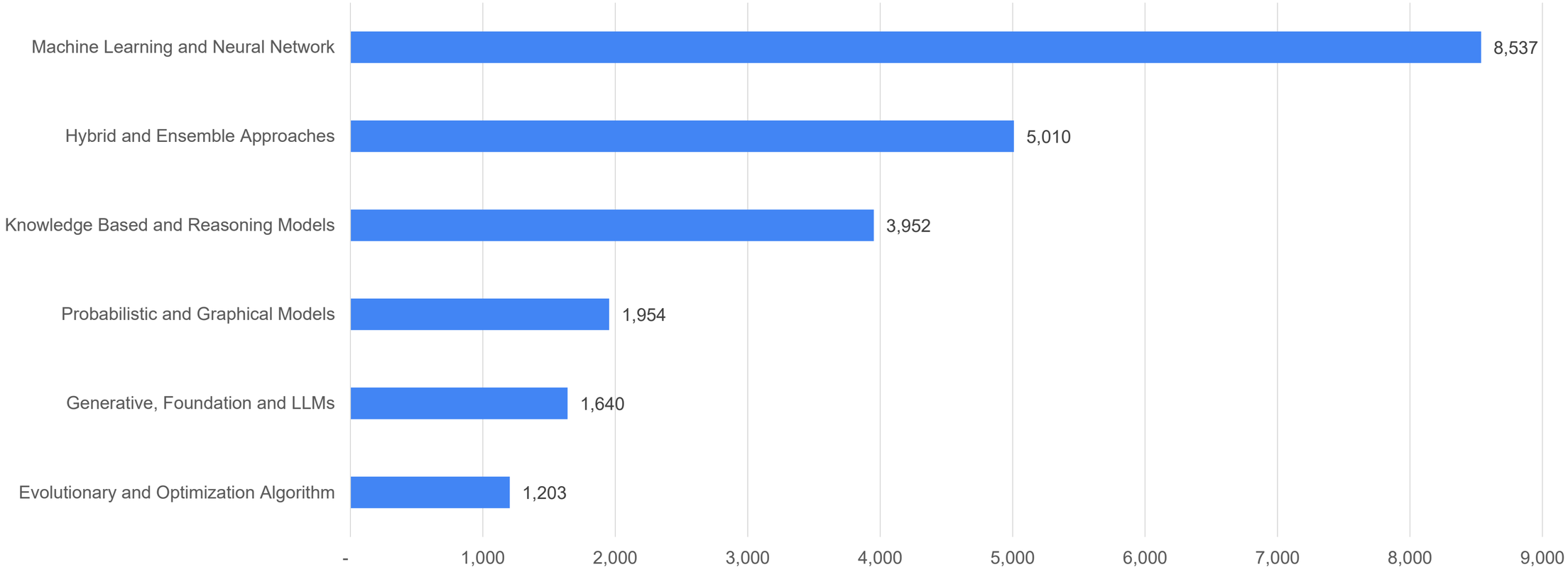
Authority/Filing Year Trend



Top Assignees



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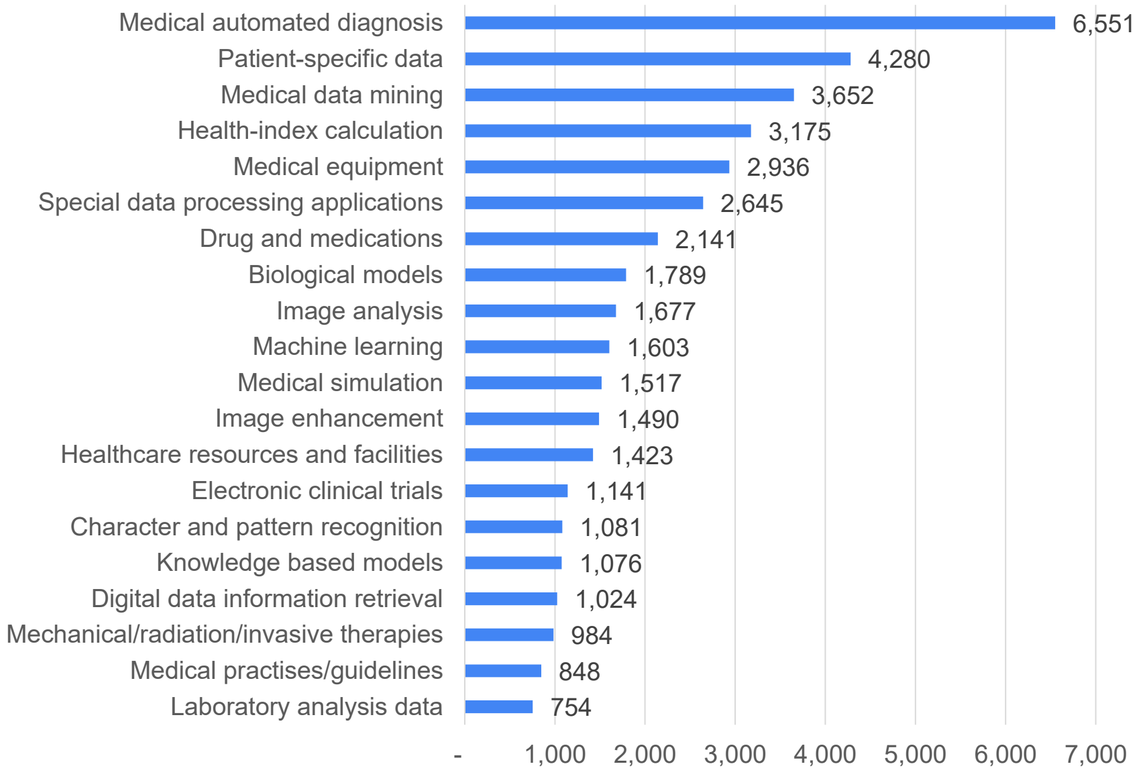


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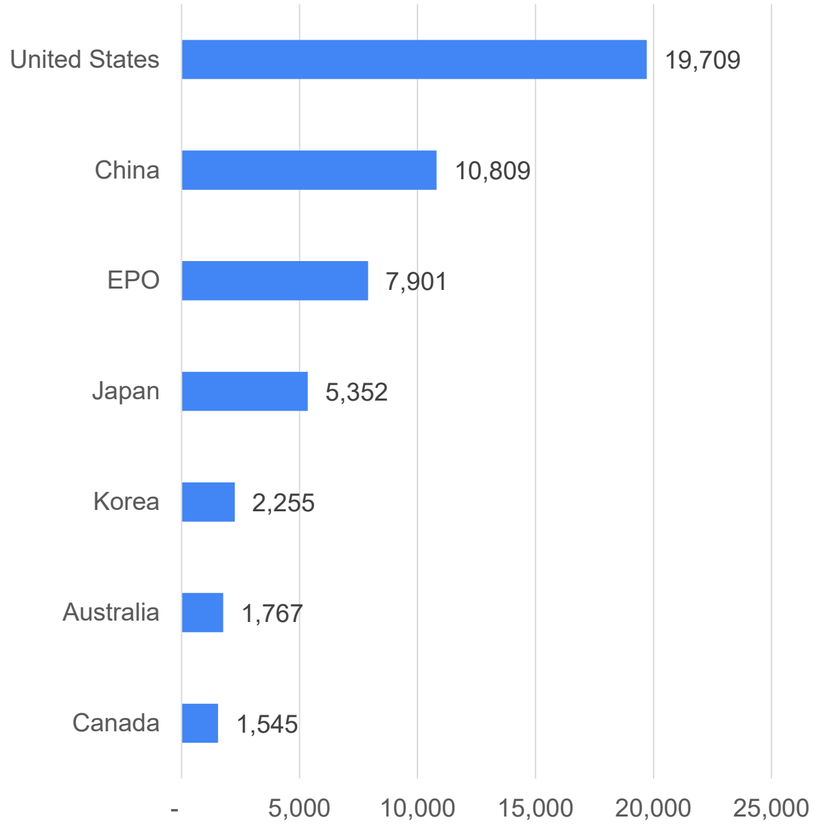


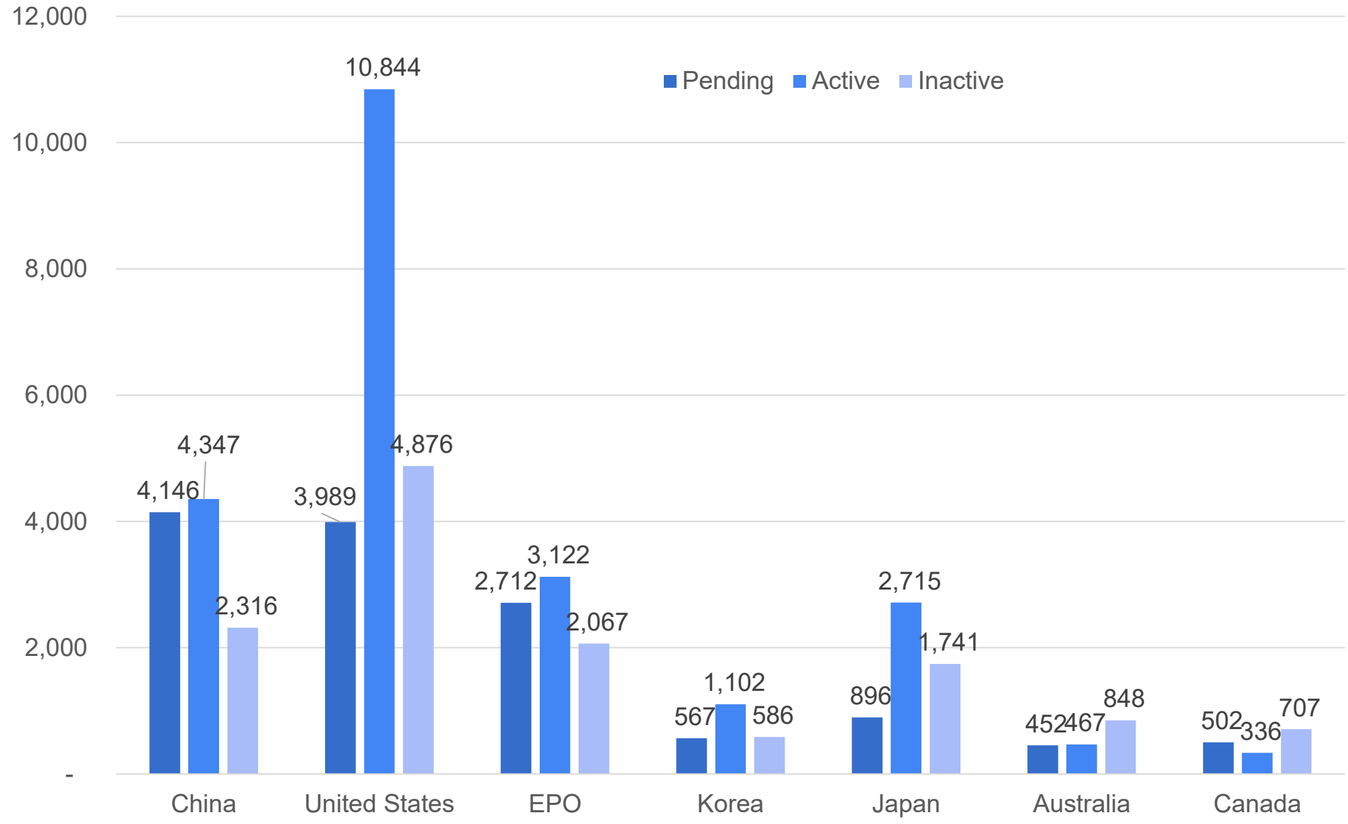
Application Domain/Filing Year Matrix

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Medical automated diagnosis	269	298	412	548	726	777	671	771	719	309
Patient-specific data	157	211	244	283	461	427	405	445	516	194
Medical data mining	87	144	204	259	410	420	396	497	569	259
Health-index calculation	70	193	206	239	336	384	344	380	422	196
Medical equipment	128	187	205	182	283	343	260	321	225	86
Special data processing applications	204	148	106	110	135	131	78	124	200	71
Drug and medications	87	97	149	134	265	250	278	259	158	72
Biological models	13	47	107	183	234	219	163	217	400	175
Image analysis	21	100	128	193	182	262	182	215	207	65
Machine learning	28	78	123	199	224	248	188	204	207	67
Medical simulation	70	107	85	119	193	165	154	149	149	58
Image enhancement	19	80	105	175	171	248	163	185	178	58
Healthcare resources and facilities	54	89	84	91	155	162	112	142	176	51
Electronic clinical trials	50	63	61	66	148	140	98	95	101	59
Character and pattern recognition	12	61	66	100	125	163	122	128	177	55
Knowledge based models	31	47	62	92	133	104	74	97	198	124
Digital data information retrieval	43	44	76	74	103	99	69	106	177	65
Mechanical/radiation/invasive therapies	22	33	58	89	116	128	140	148	106	43
Medical practises/guidelines	39	39	39	62	103	78	48	63	80	26
Laboratory analysis data	12	29	58	60	87	98	106	105	66	41

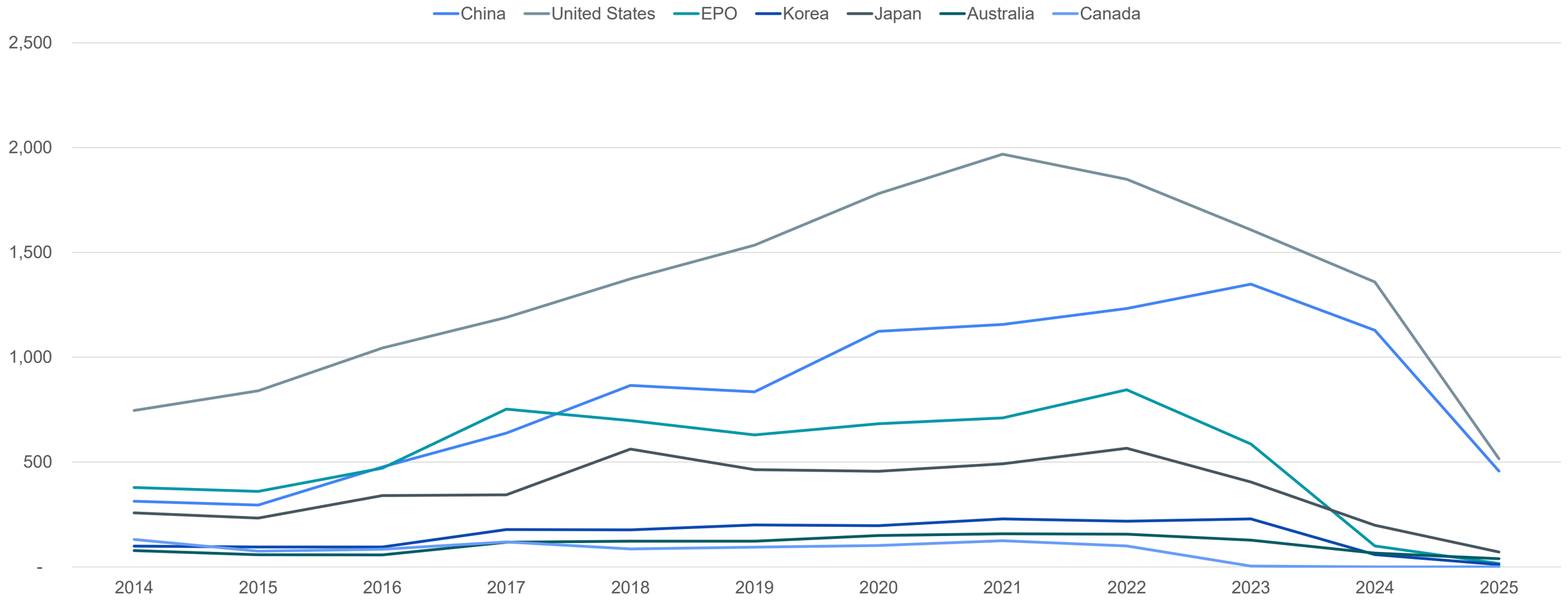
Robotics & Surgical Assistance

Authority/Status Comparison

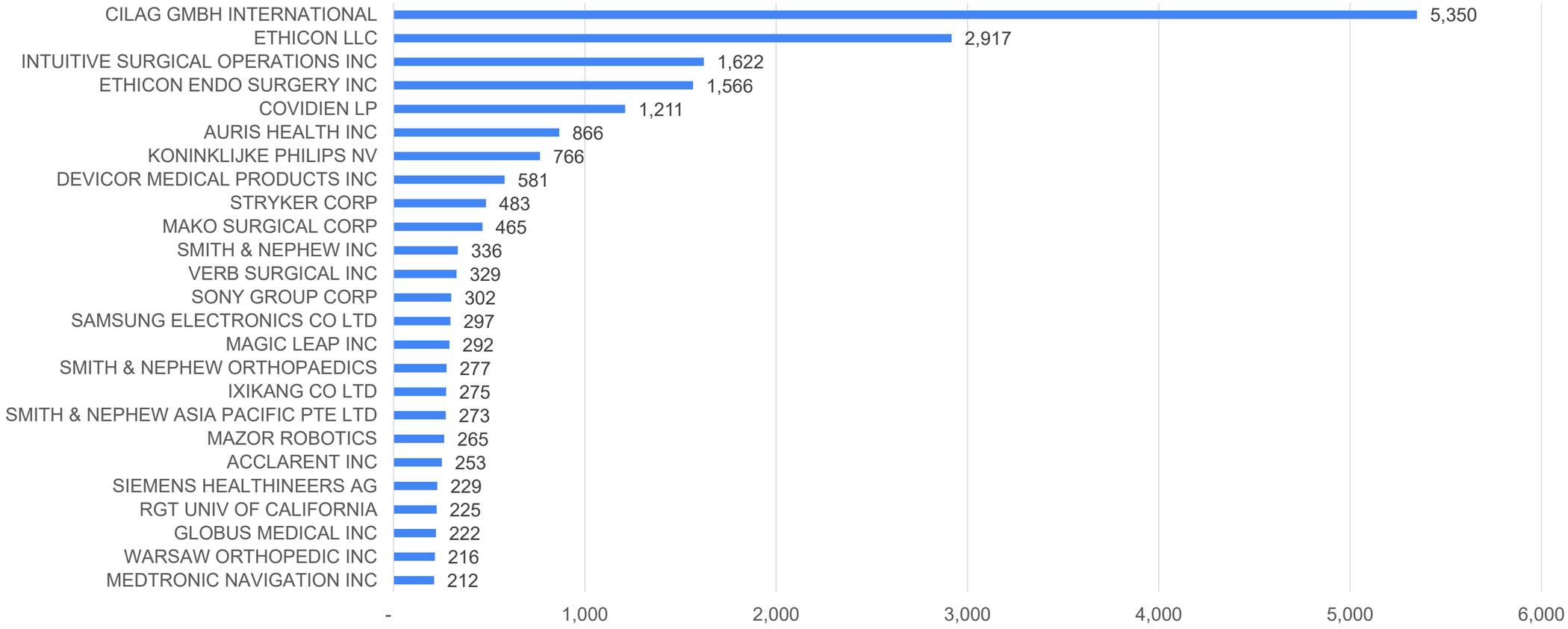




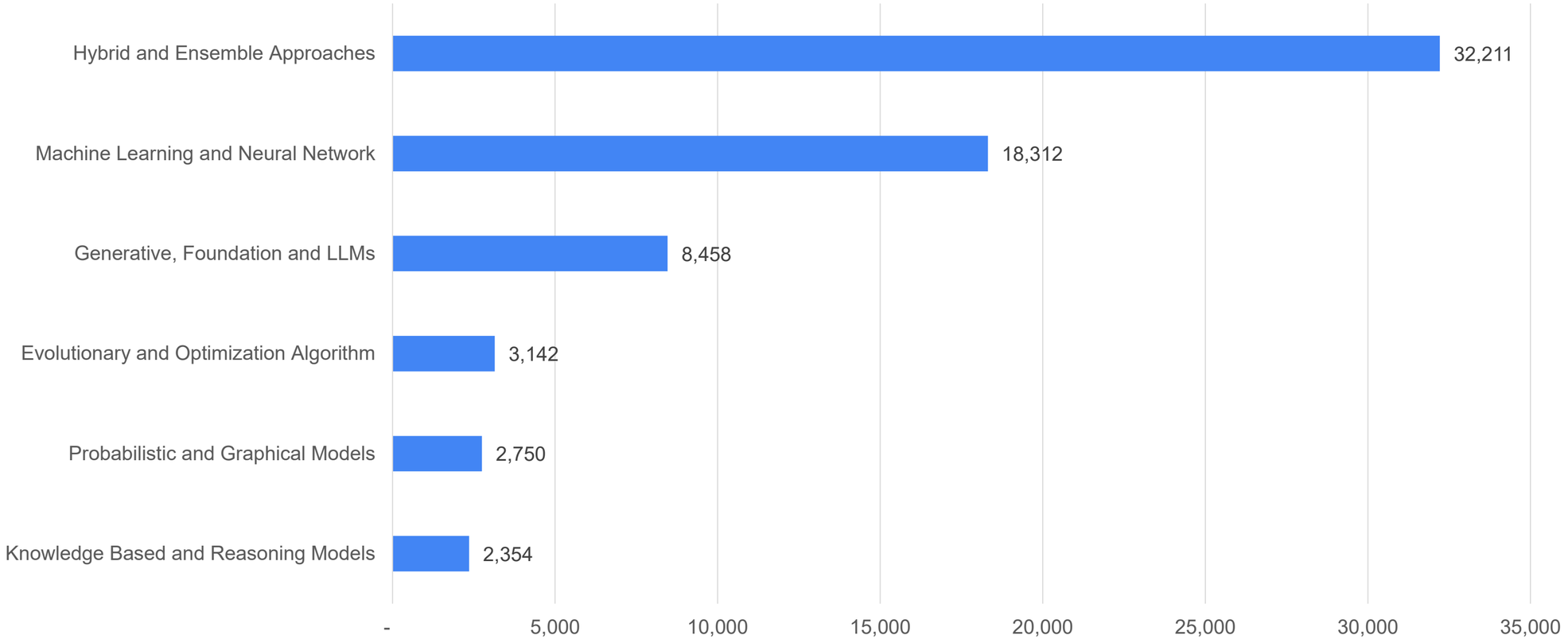
Authority/Filing Year Trend



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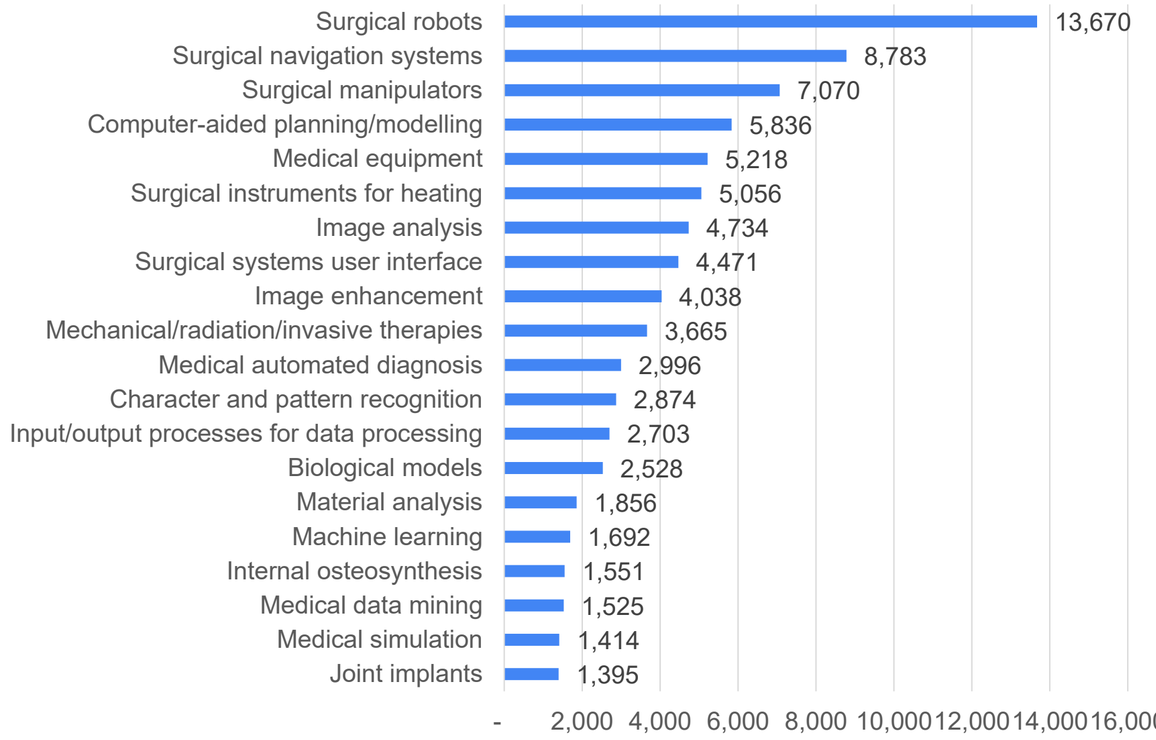


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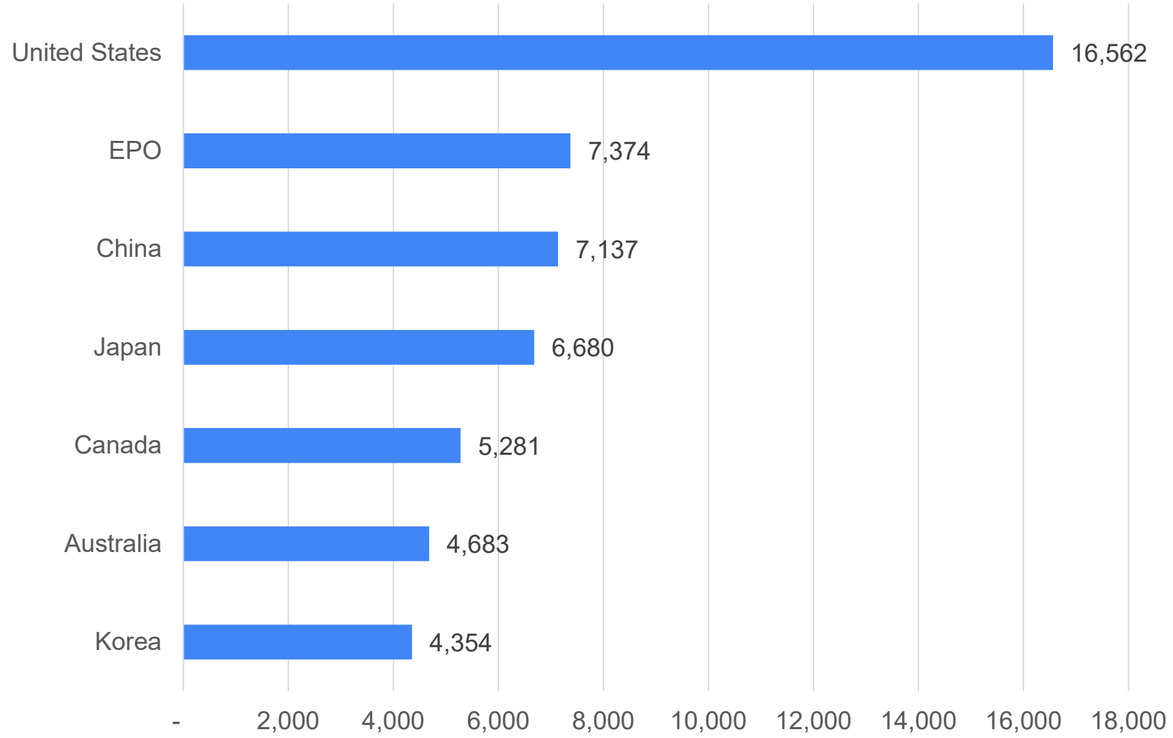


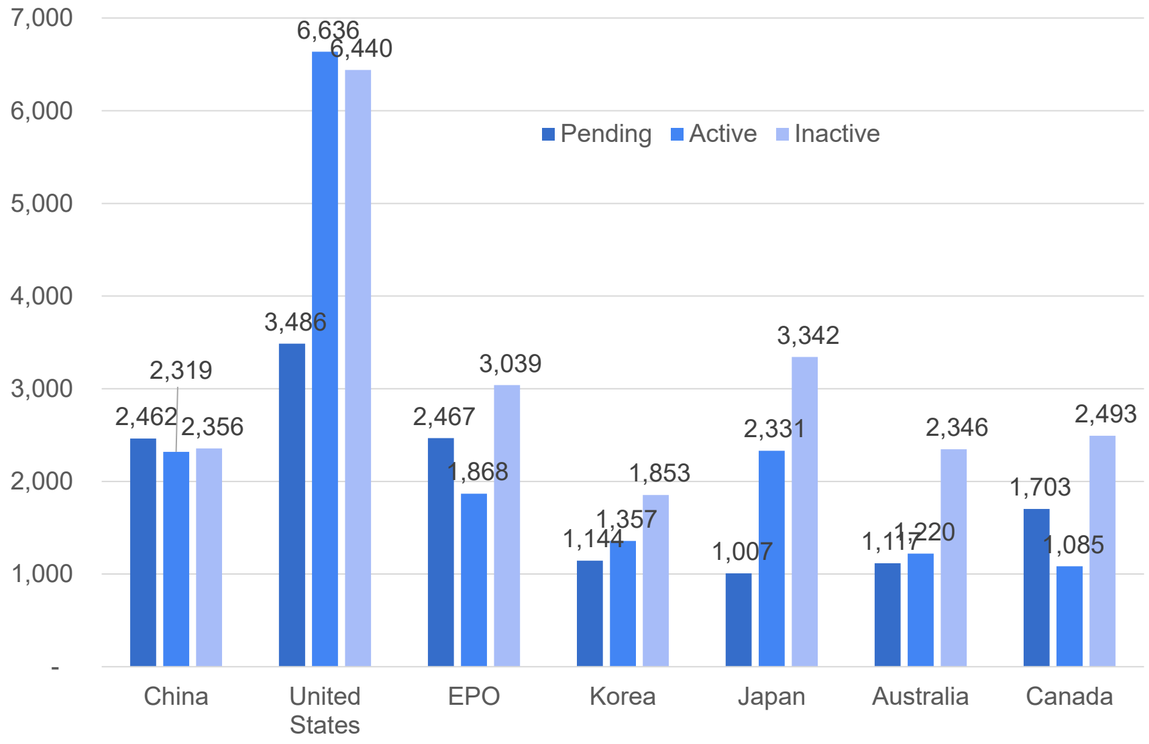
Application Domain/Filing Year Matrix

Application Domain / Filing Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Surgical robots	146	165	176	356	543	411	568	912	1,336	1,196	1,431	1,600	1,698	1,297	883	347
Surgical navigation systems	97	117	114	197	222	175	305	443	719	886	975	1,057	1,159	892	661	295
Surgical manipulators	126	130	107	188	326	205	266	501	690	664	714	746	677	549	446	181
Computer-aided planning/modelling	55	65	81	100	184	140	182	260	397	482	716	767	796	657	496	224
Medical equipment	16	154	51	97	111	110	146	244	616	473	564	694	734	528	320	123
Surgical instruments for heating	80	227	106	255	230	221	404	370	656	359	387	403	452	257	159	45
Image analysis	25	53	66	77	82	127	94	198	319	391	669	631	642	603	457	180
Surgical systems user interface	40	134	34	53	96	89	85	260	477	444	550	601	610	446	303	131
Image enhancement	17	44	40	64	69	116	82	174	267	331	594	557	572	508	386	148
Mechanical/radiation/invasive therapies	6	128	20	46	77	54	63	120	372	351	413	553	645	375	236	93
Medical automated diagnosis	8	17	19	22	40	23	118	126	205	274	385	499	506	407	204	68
Character and pattern recognition	20	31	32	28	45	93	81	199	225	248	335	353	391	304	251	107
Input/output processes for data processing	52	23	36	42	114	93	116	264	264	293	274	309	293	221	136	64
Biological models	1	5	2	0	2	4	16	84	125	288	368	372	402	393	307	147
Material analysis	44	66	38	60	63	66	136	171	155	102	185	158	117	108	62	26
Machine learning	2	1	3	0	3	6	17	59	119	235	281	272	261	263	116	47
Internal osteosynthesis	57	55	66	77	148	48	66	72	106	94	66	92	126	98	105	32
Medical data mining	4	8	2	6	6	18	46	66	159	120	189	224	266	219	121	57
Medical simulation	8	11	19	10	49	42	52	69	81	156	218	185	216	138	83	34
Joint implants	60	58	58	38	84	51	64	94	60	97	110	108	106	70	72	26

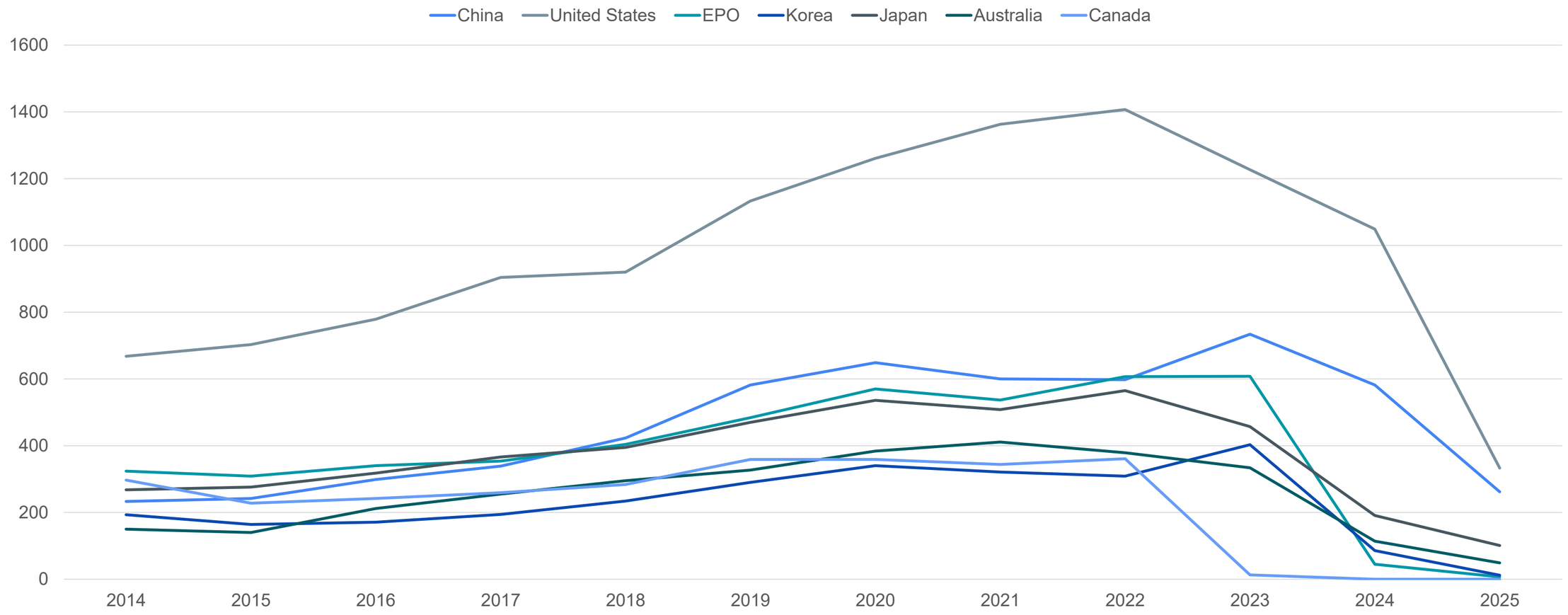
Drug Discovery & Development

Authority/Status Comparison

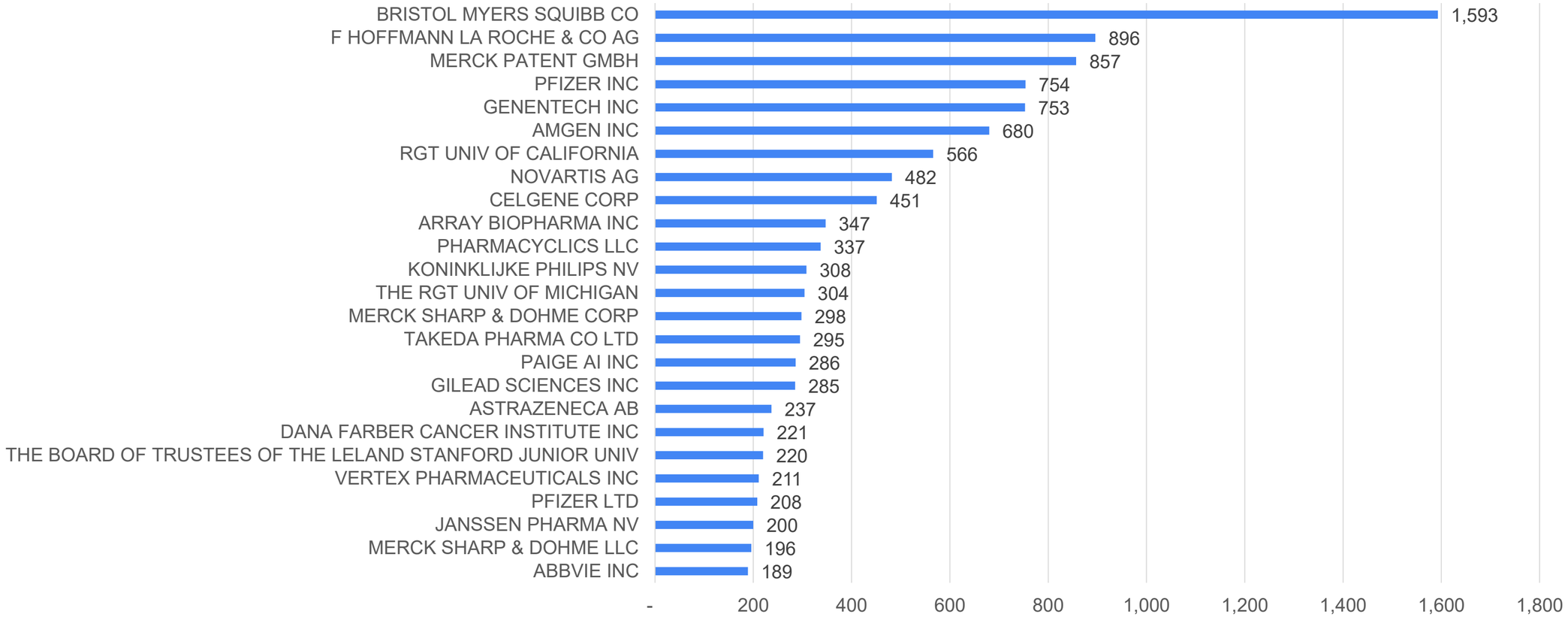




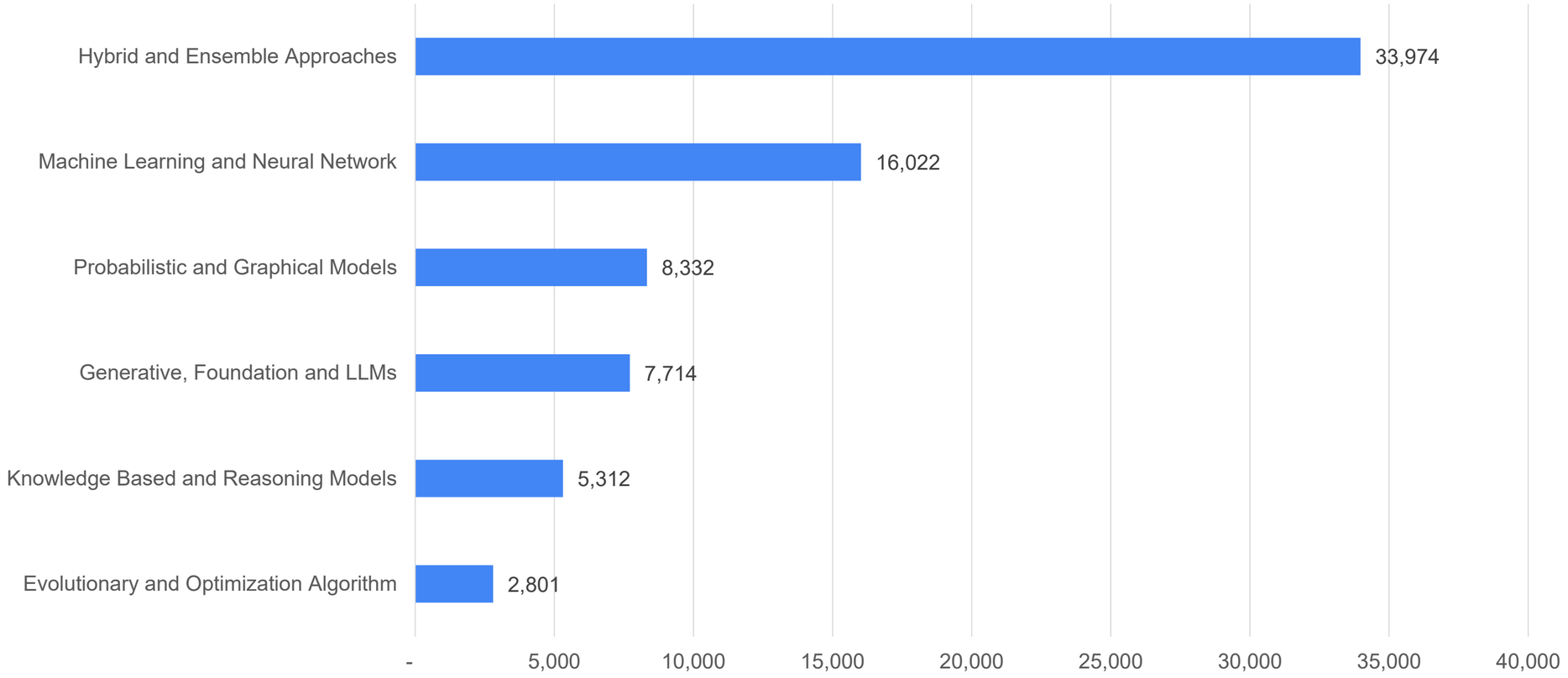
Authority/Filing Year Trend



Top Assignees



AI Categorization Comparison

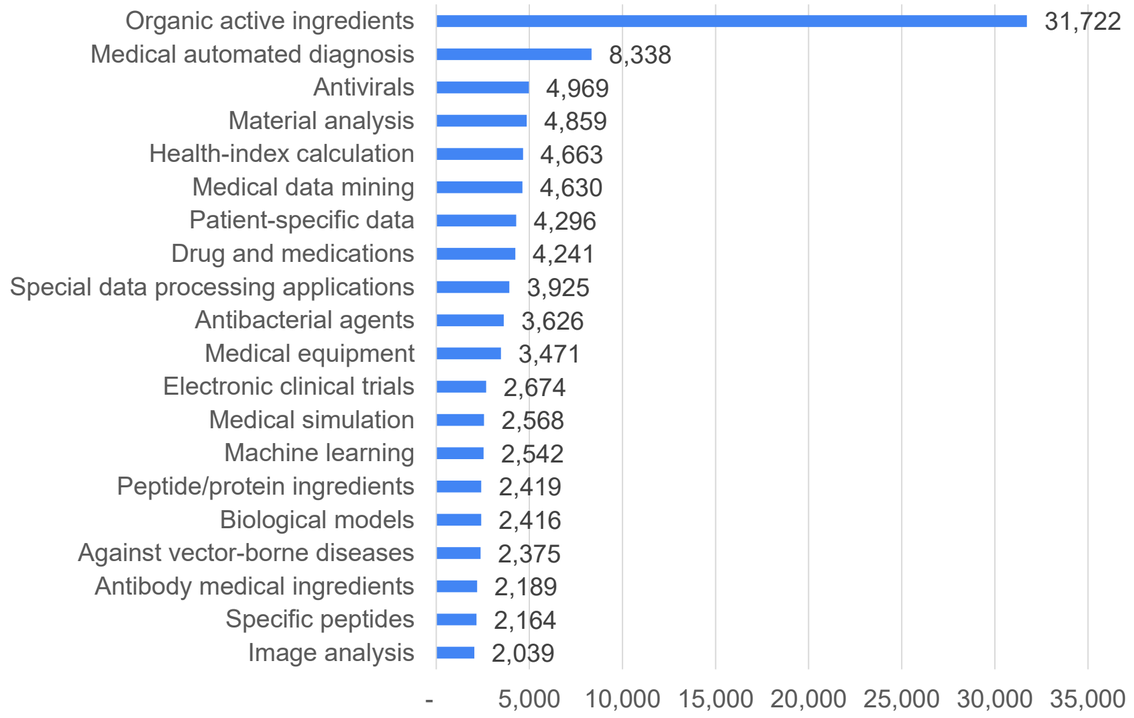


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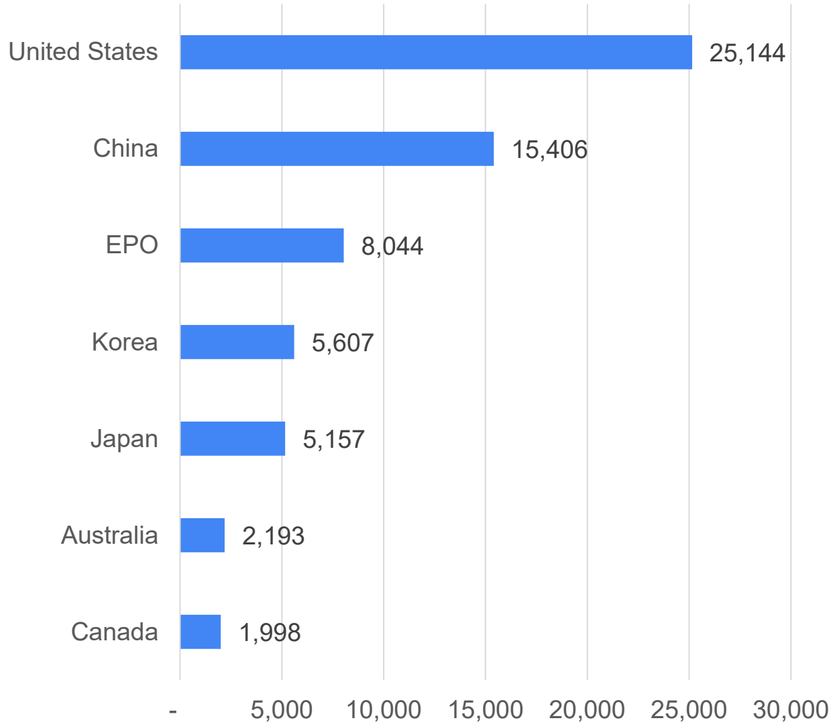


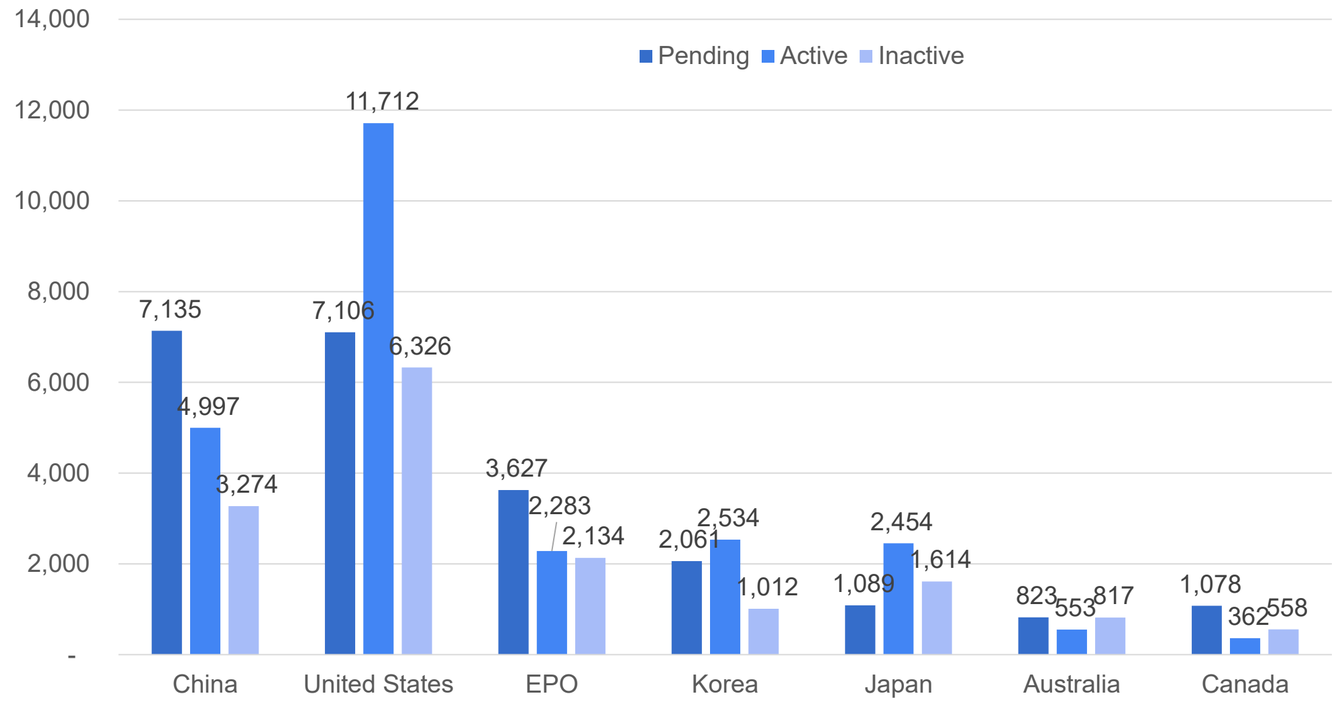
Application Domain/Filing Year Matrix

Application Domain / Filing Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Organic active ingredients	1,535	1,690	1,796	2,114	2,239	1,796	1,933	1,622	604	201
Medical automated diagnosis	322	382	487	628	927	1,242	1,146	1,053	609	240
Antivirals	189	169	144	209	274	218	199	154	59	16
Material analysis	307	345	312	324	337	379	372	322	152	52
Health-index calculation	121	265	320	416	464	623	575	555	350	138
Medical data mining	117	153	279	364	441	610	685	682	438	199
Patient-specific data	121	161	238	332	403	523	493	479	371	127
Drug and medications	117	176	250	299	390	499	661	523	275	152
Special data processing applications	255	234	168	160	159	212	154	190	169	59
Antibacterial agents	147	164	137	142	127	74	101	56	23	14
Medical equipment	127	220	177	211	311	405	428	416	198	96
Electronic clinical trials	88	98	143	185	260	392	308	313	244	92
Medical simulation	116	151	178	169	243	287	302	276	132	54
Machine learning	47	75	126	278	386	453	343	364	224	78
Peptide/protein ingredients	123	94	190	171	174	131	108	75	51	12
Biological models	12	29	116	227	342	399	369	384	306	141
Against vector-borne diseases	95	164	158	171	109	118	106	45	37	23
Antibody medical ingredients	87	119	160	272	200	140	163	141	50	22
Specific peptides	121	123	203	257	175	112	132	118	62	25
Image analysis	70	89	106	158	273	329	326	286	156	80

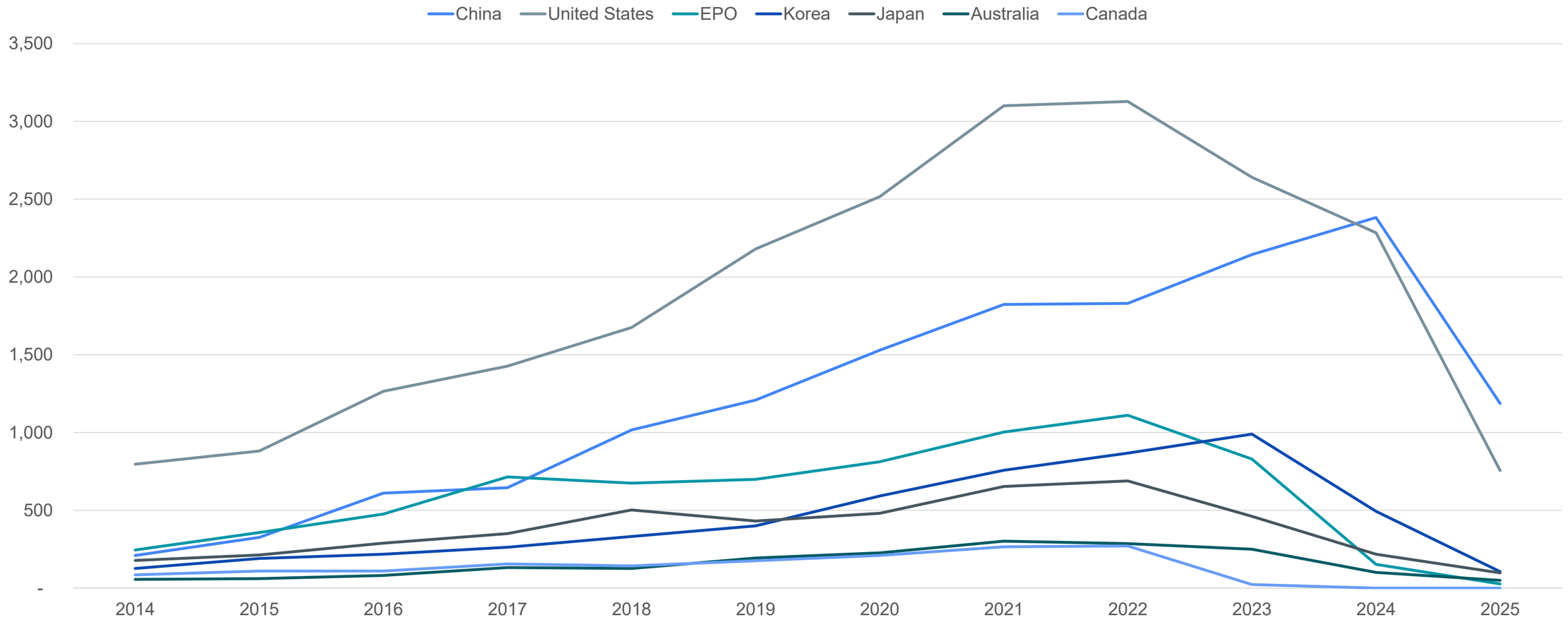
Remote Monitoring

Authority/Status Comparison

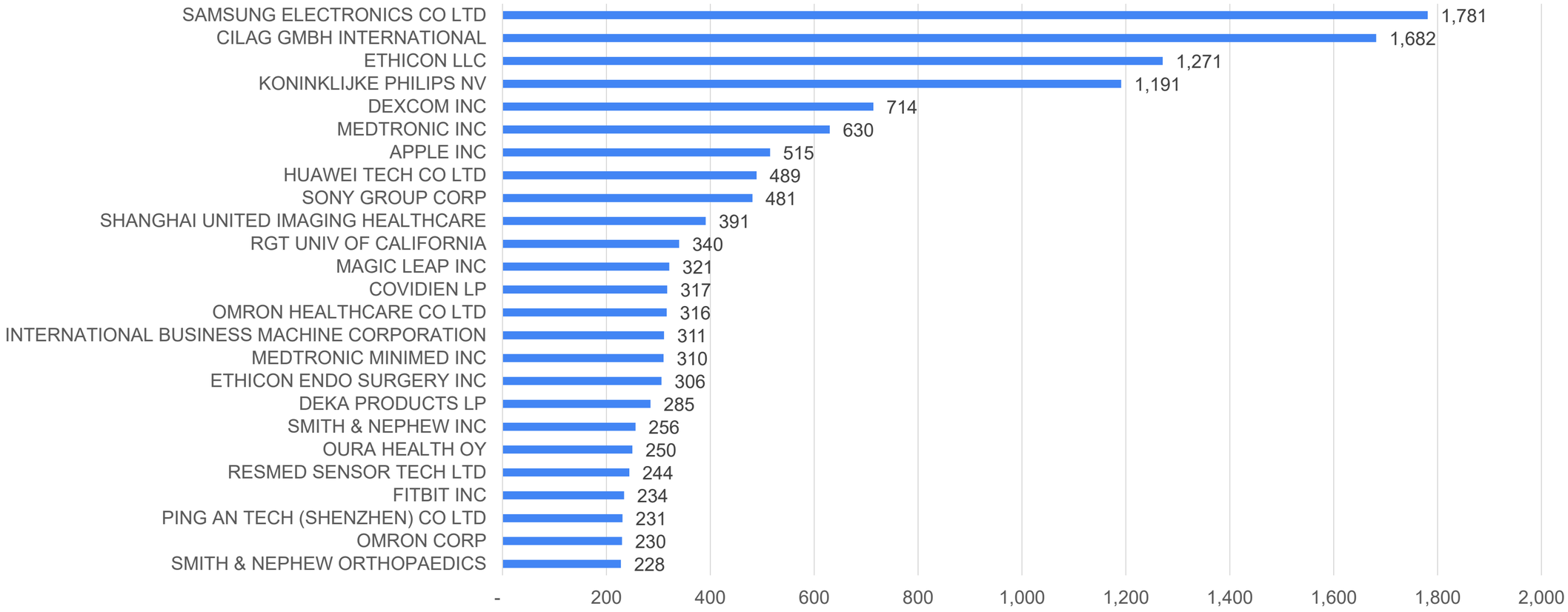




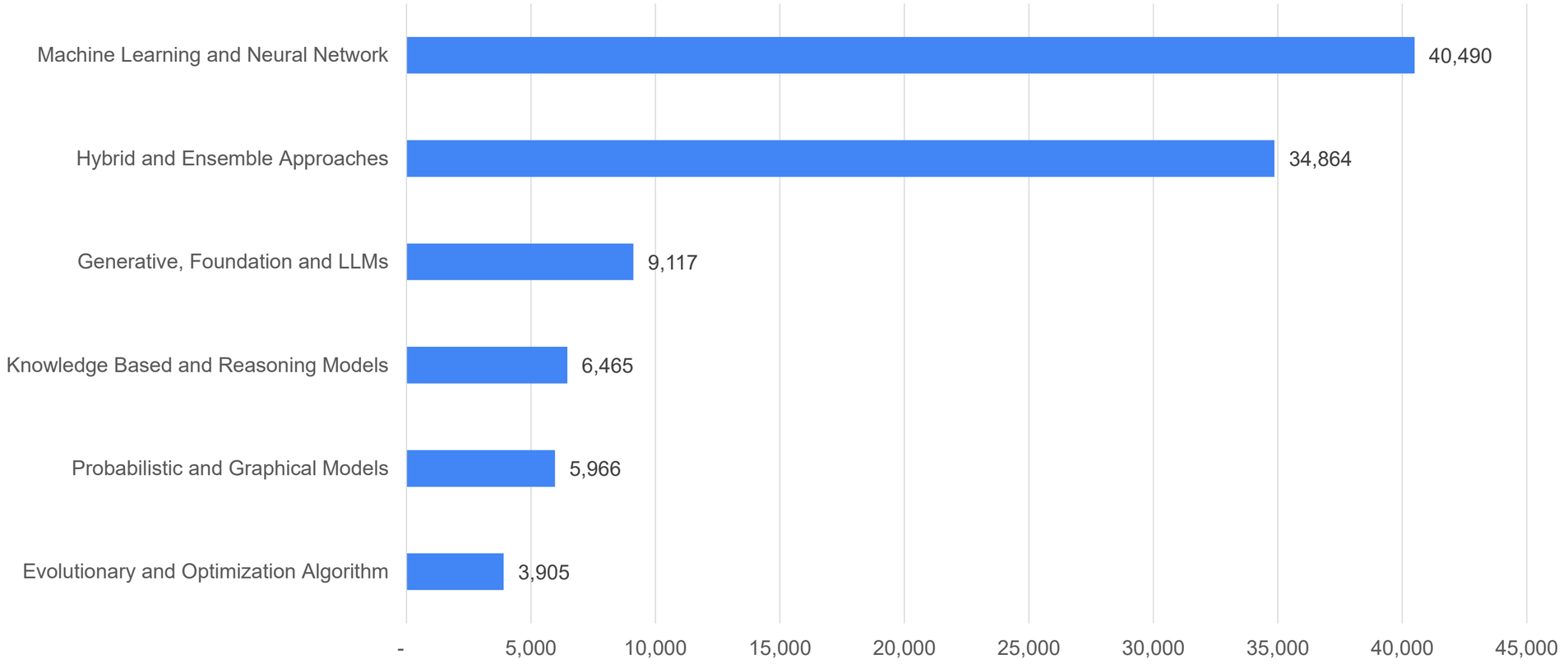
Authority/Filing Year Trend



Top Assignees



AI Categorization Comparison

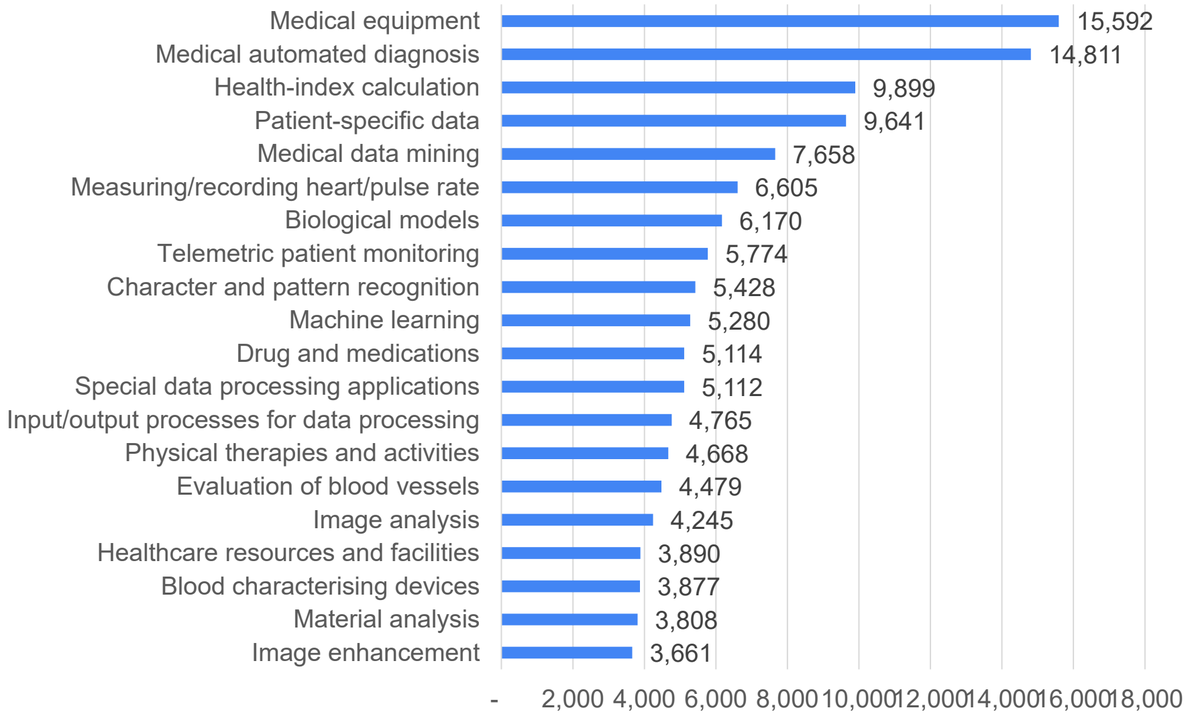


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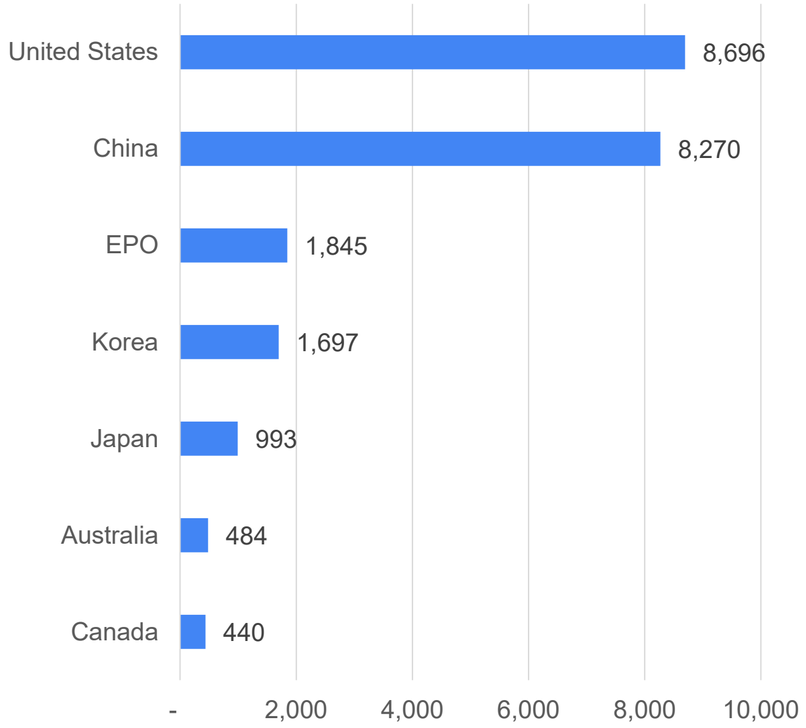
Application Domain / Filing Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Medical equipment	718	823	1,185	1,342	1,775	2,259	2,106	1,697	1,061	395
Medical automated diagnosis	519	642	831	1,238	1,743	2,373	2,462	2,056	1,375	507
Health-index calculation	259	480	550	840	1,167	1,432	1,480	1,309	1,123	600
Patient-specific data	362	362	534	673	1,128	1,255	1,343	1,376	1,134	418
Medical data mining	165	273	480	536	899	1,154	1,219	1,131	1,008	500
Measuring/recording heart/pulse rate	499	469	522	630	634	812	852	723	453	262
Biological models	58	112	267	636	873	950	921	856	968	497
Telemetric patient monitoring	431	381	415	560	626	697	669	447	289	115
Character and pattern recognition	190	340	377	587	576	776	844	585	556	187
Machine learning	98	223	337	641	850	889	777	576	523	202
Drug and medications	164	224	307	365	605	813	828	704	380	156
Special data processing applications	480	395	273	350	404	367	384	386	344	133
Input/output processes for data processing	225	365	399	553	487	584	564	488	391	125
Physical therapies and activities	200	220	265	369	453	637	745	593	428	178
Evaluation of blood vessels	322	373	339	516	452	587	468	432	296	131
Image analysis	123	197	330	453	512	676	645	485	462	157
Healthcare resources and facilities	98	125	310	273	510	593	663	523	381	173
Blood characterising devices	270	242	267	352	417	487	426	389	394	142
Material analysis	219	265	312	312	317	380	355	295	241	86
Image enhancement	97	160	272	416	447	577	562	431	397	133

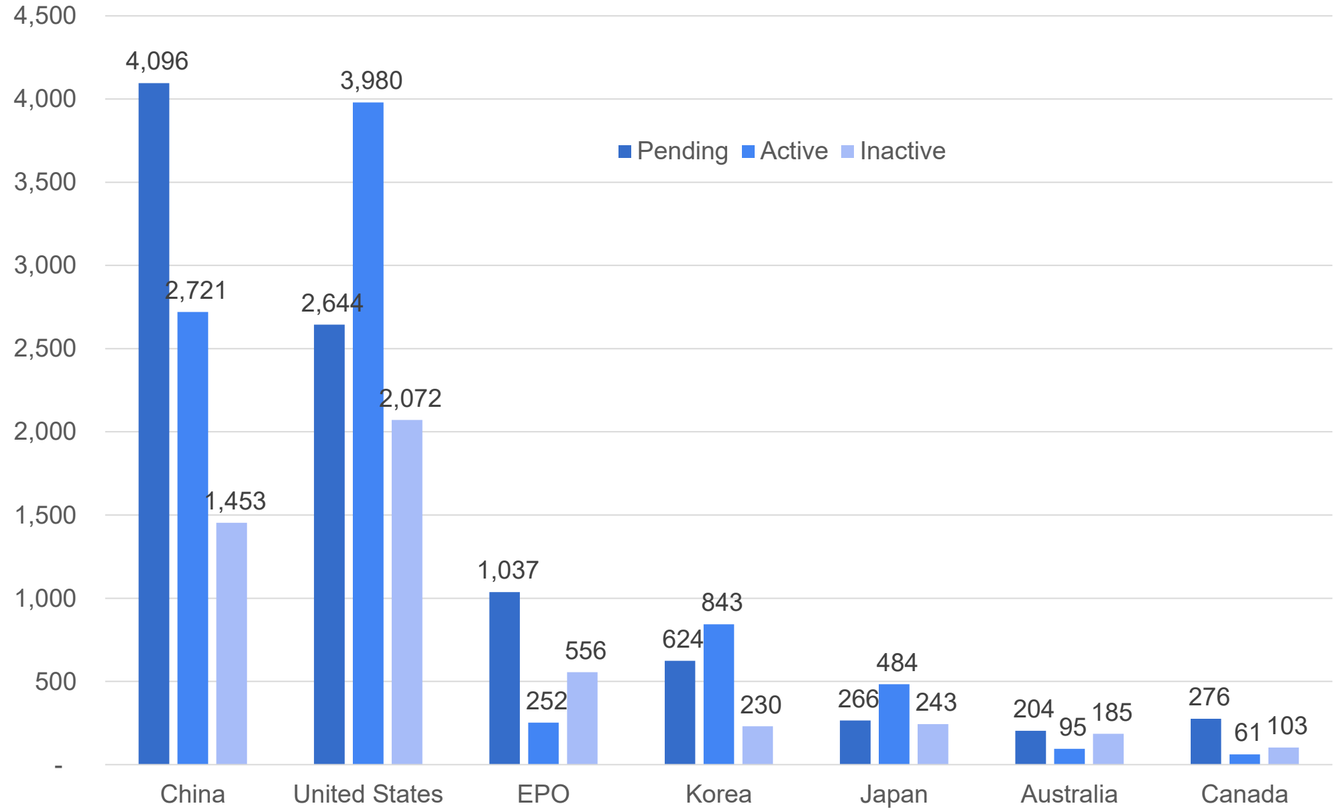
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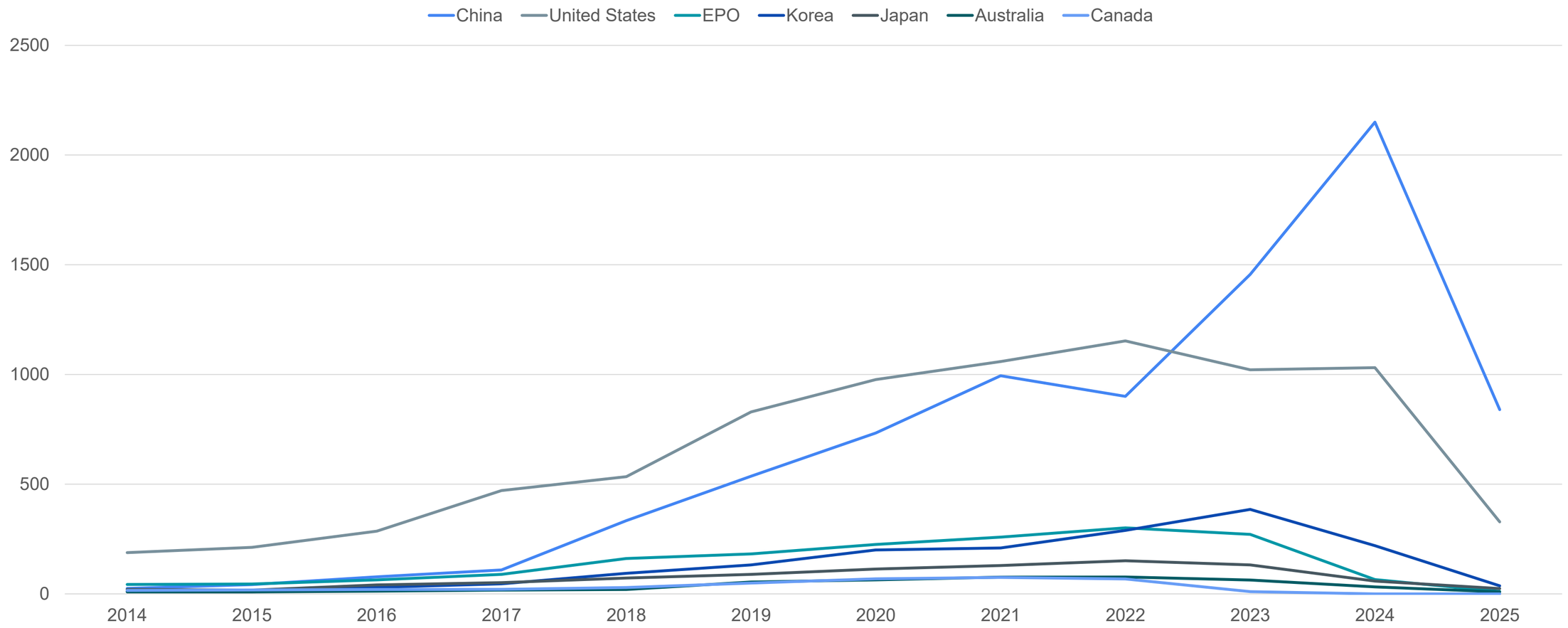
NLP for Data Extraction

Authority/Status Comparison

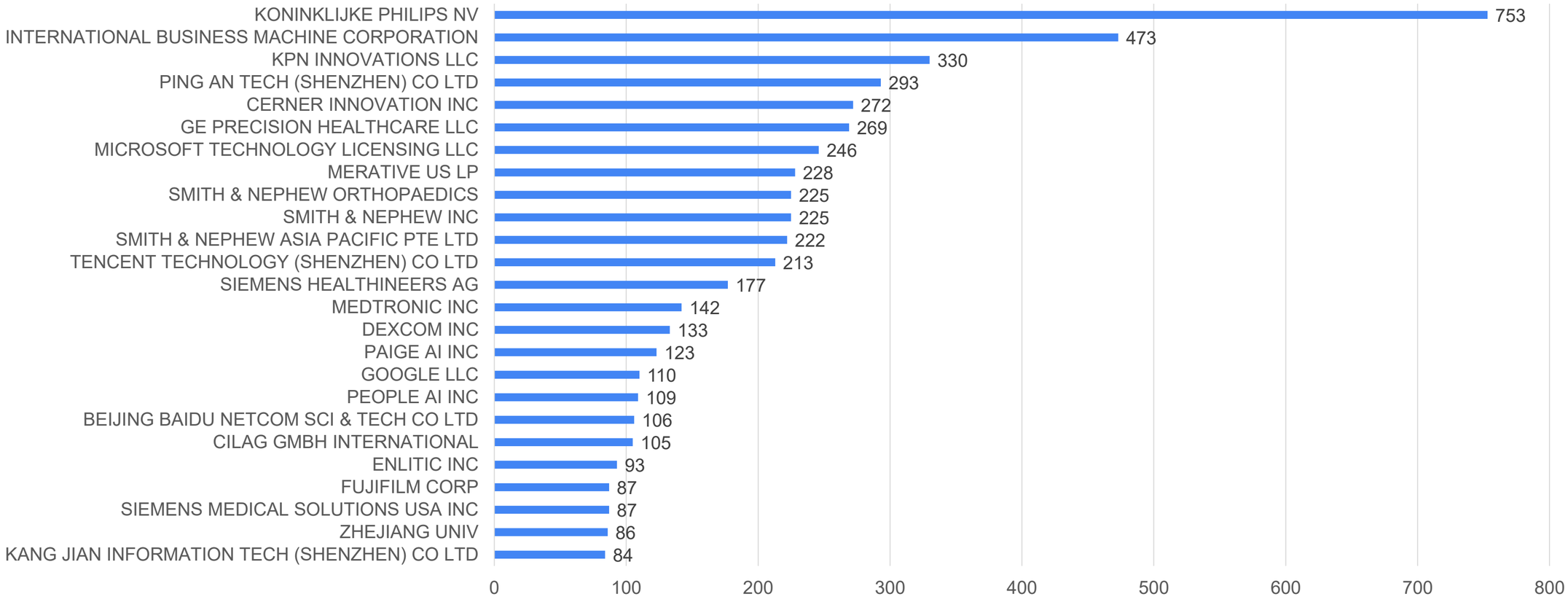




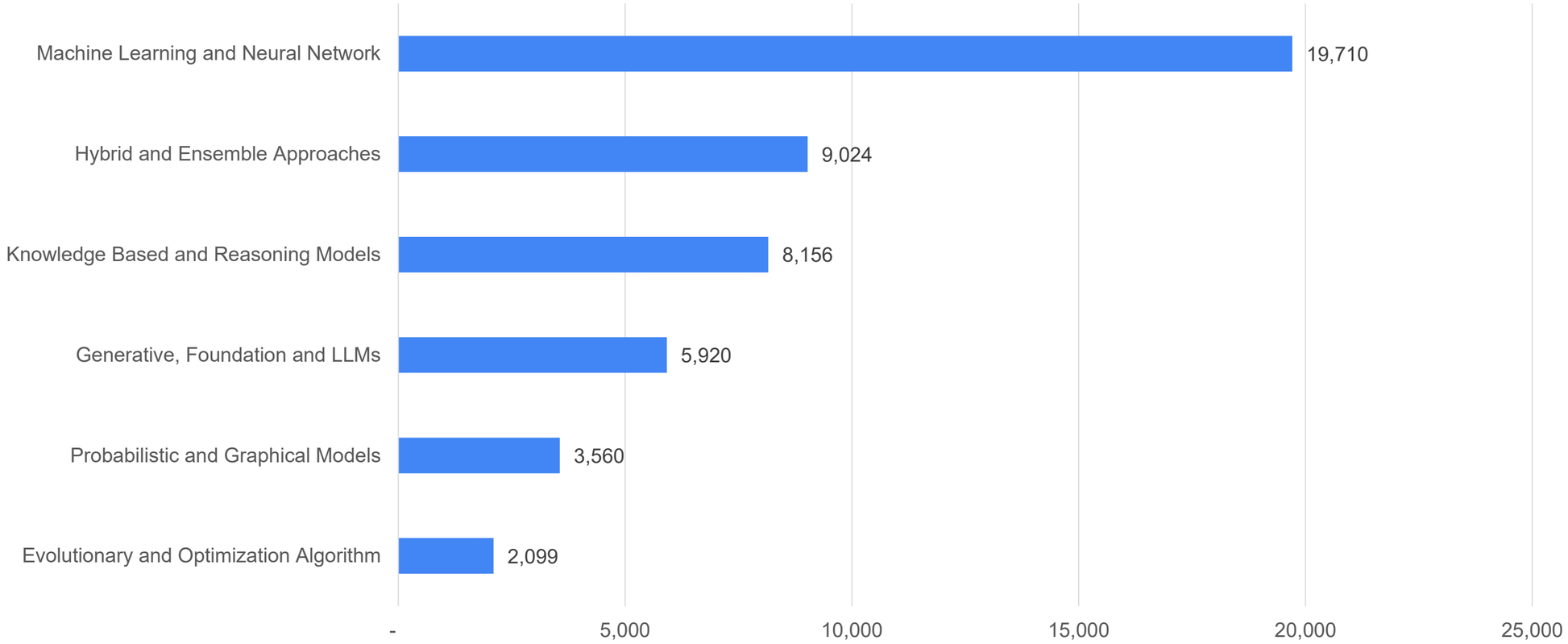
Authority/Filing Year Trend



Top Assignees



AI Categorization Comparison

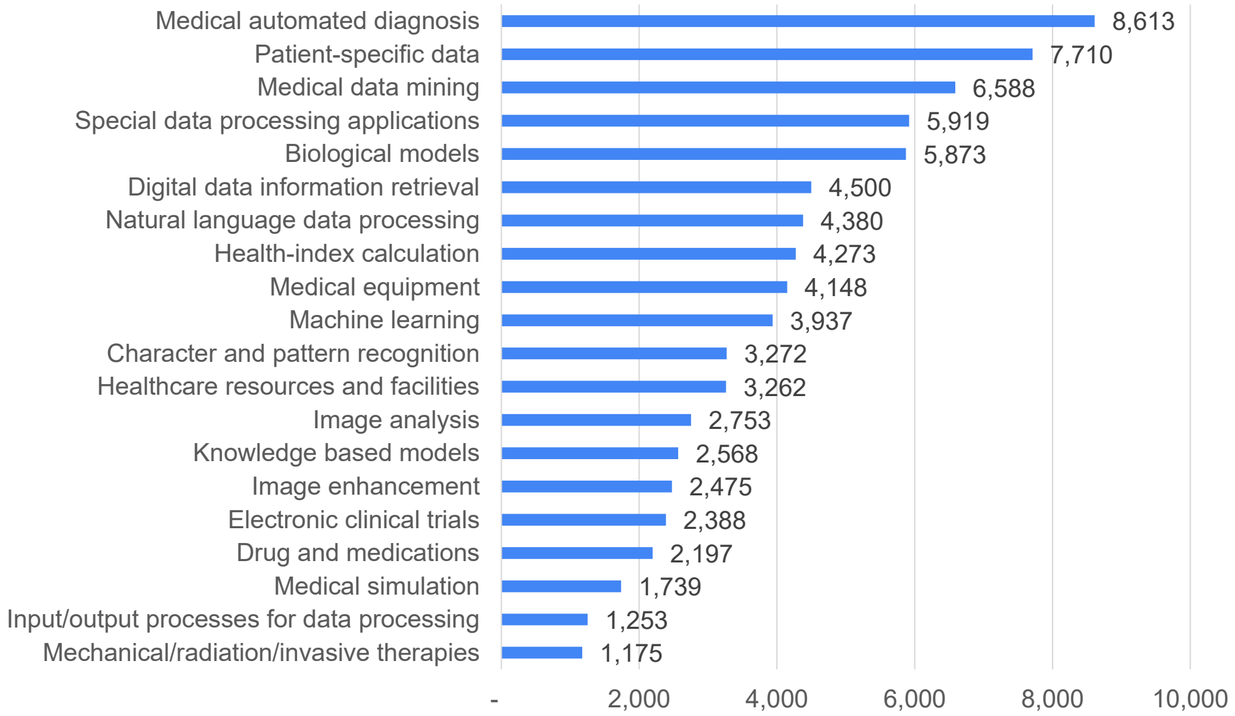


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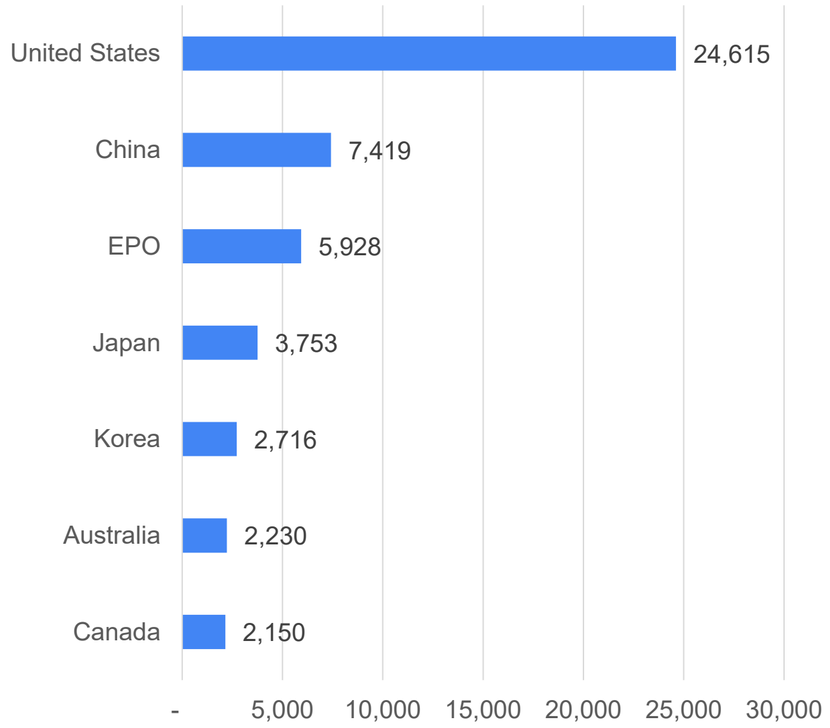
Application Domain / Filing Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Medical automated diagnosis	188	347	482	805	1,101	1,186	1,141	1,263	1,187	402
Patient-specific data	217	309	414	610	828	913	977	1,094	1,083	423
Medical data mining	114	235	312	538	787	857	792	944	1,163	469
Special data processing applications	263	306	330	487	551	639	575	723	791	257
Biological models	25	120	264	547	729	808	750	971	1,181	451
Digital data information retrieval	98	129	222	435	494	597	545	691	759	249
Natural language data processing	88	142	245	447	489	582	559	674	783	203
Health-index calculation	63	164	253	437	529	565	490	551	675	322
Medical equipment	117	223	254	331	522	604	615	584	395	159
Machine learning	57	175	282	507	649	620	495	494	447	135
Character and pattern recognition	33	146	235	270	377	473	566	425	463	166
Healthcare resources and facilities	82	122	206	254	361	425	427	459	427	166
Image analysis	45	116	187	290	351	386	451	348	362	128
Knowledge based models	36	127	132	249	345	252	221	284	534	267
Image enhancement	38	97	175	264	329	350	408	301	319	113
Electronic clinical trials	72	95	126	226	298	304	327	326	299	98
Drug and medications	49	82	106	180	272	336	344	285	250	125
Medical simulation	34	81	77	200	257	225	180	223	222	78
Input/output processes for data processing	63	69	99	117	136	183	158	128	136	47
Mechanical/radiation/invasive therapies	14	24	52	122	172	192	193	167	125	61

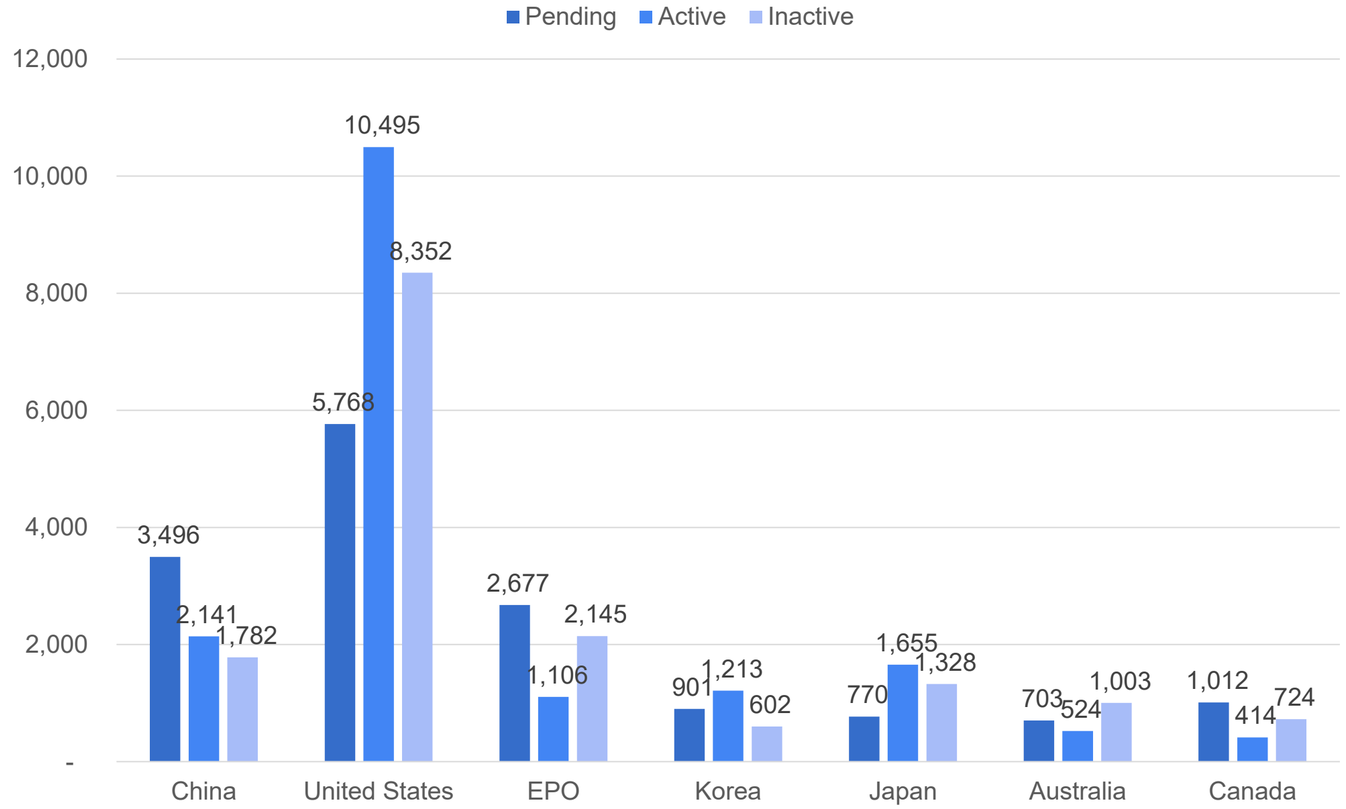
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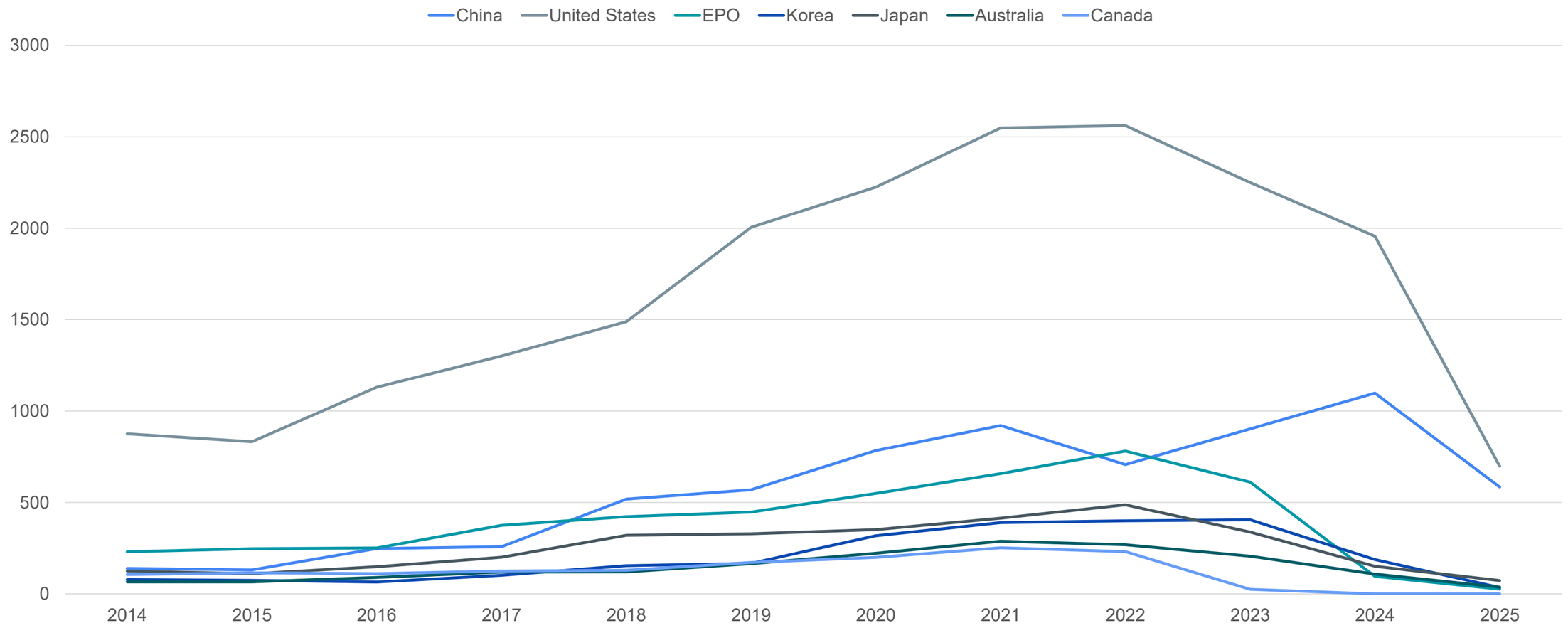
Administrative Automation

Authority/Status Comparison

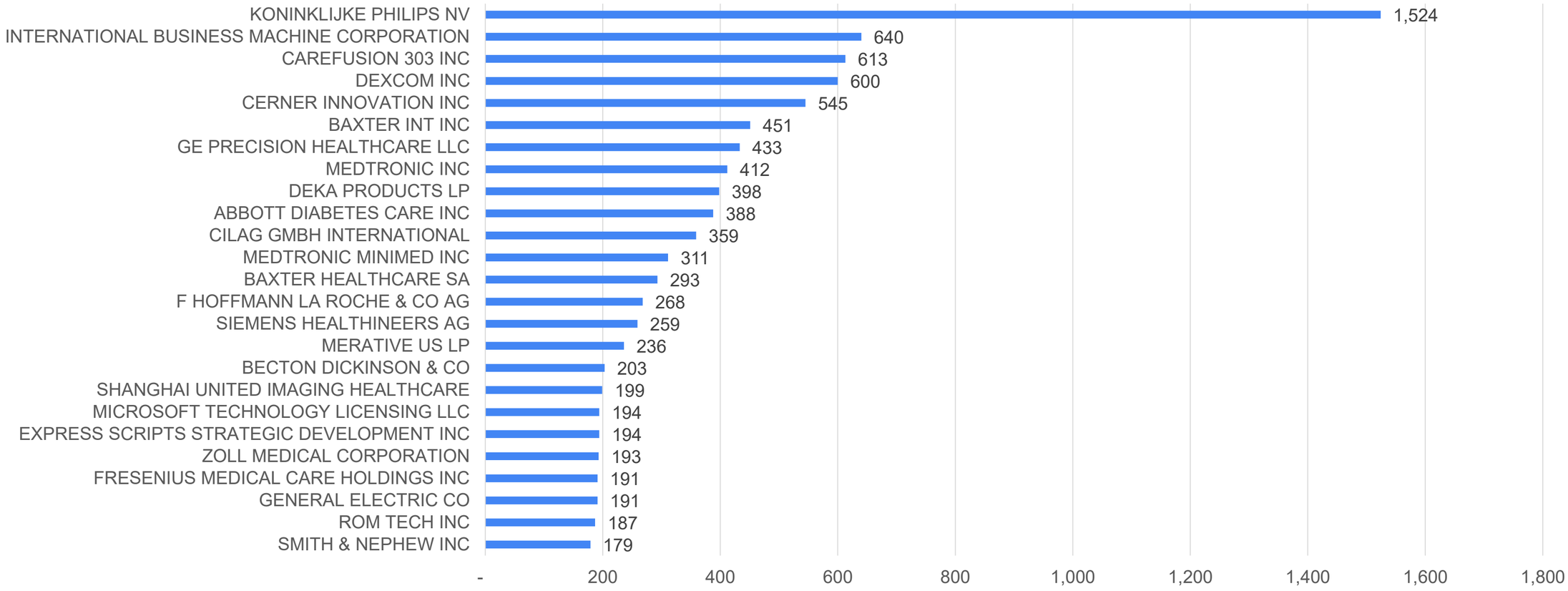




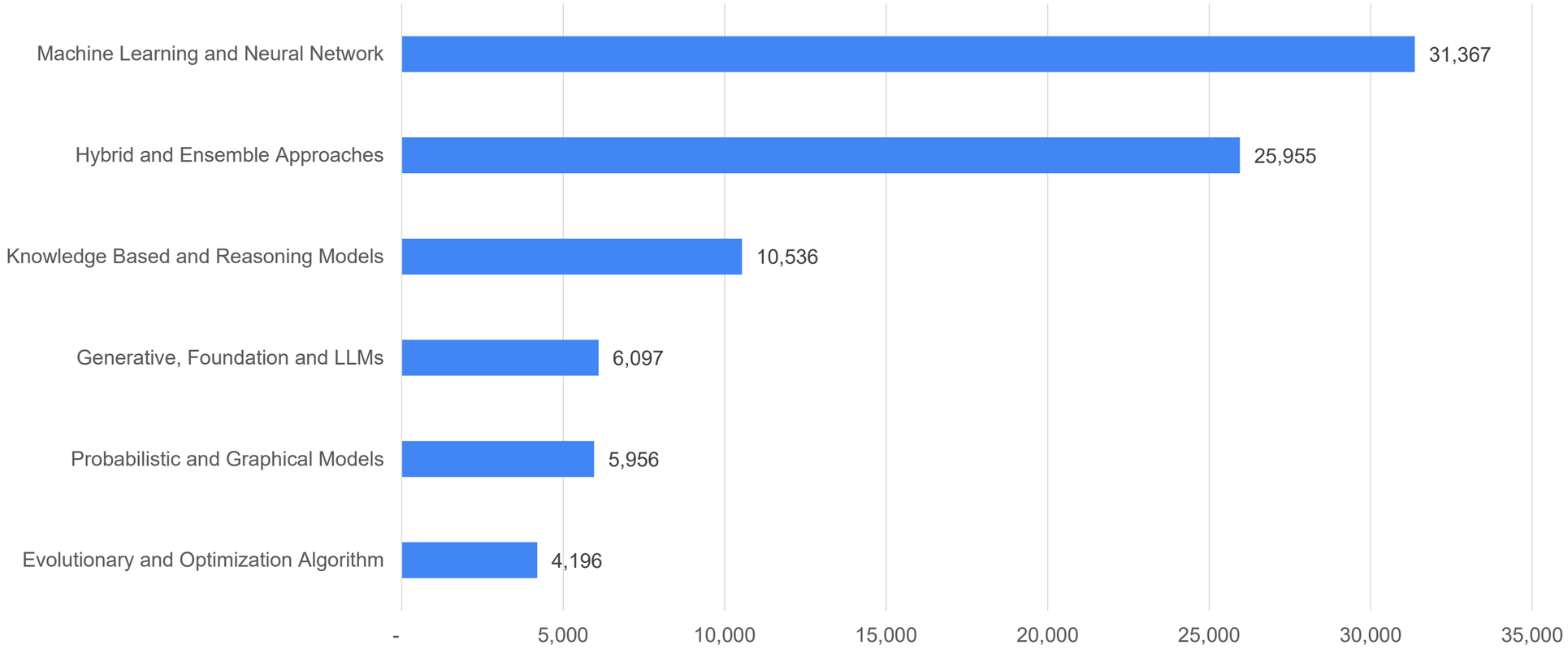
Authority/Filing Year Trend



Top Assignees



AI Categorization Comparison

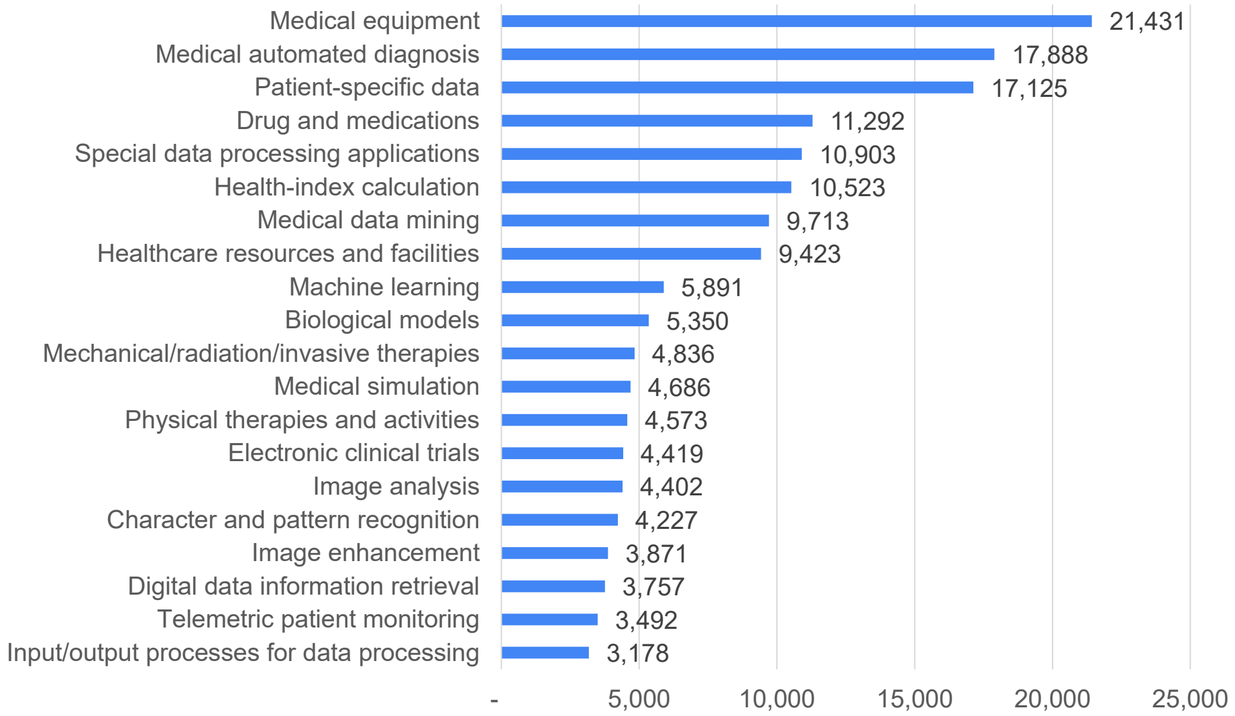


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Medical equipment	982	1,197	1,349	1,570	2,027	2,475	2,361	1,929	1,151	504
Medical automated diagnosis	650	906	1,140	1,610	2,099	2,498	2,450	2,038	1,354	493
Patient-specific data	650	791	1,030	1,313	1,702	1,844	1,782	1,674	1,283	530
Drug and medications	437	537	669	794	1,076	1,277	1,186	975	551	259
Special data processing applications	822	688	478	545	551	544	458	399	389	138
Health-index calculation	314	604	761	1,027	1,266	1,417	1,441	1,178	866	426
Medical data mining	227	441	621	771	1,180	1,397	1,451	1,226	908	432
Healthcare resources and facilities	304	409	577	762	1,076	1,138	1,139	1,035	824	339
Machine learning	112	279	414	872	952	1,012	775	572	489	164
Biological models	33	154	349	737	822	889	702	644	628	312
Mechanical/radiation/invasive therapies	192	162	338	440	508	642	644	548	336	130
Medical simulation	224	328	266	426	528	566	542	431	275	125
Physical therapies and activities	214	255	309	334	428	596	607	454	329	107
Electronic clinical trials	136	211	216	306	528	648	523	463	339	114
Image analysis	143	222	341	494	574	601	619	526	379	147
Character and pattern recognition	129	263	306	436	530	615	567	376	327	118
Image enhancement	129	187	299	440	511	521	568	472	331	125
Digital data information retrieval	178	186	282	412	447	422	382	333	323	123
Telemetric patient monitoring	203	195	284	227	298	299	320	218	108	58
Input/output processes for data processing	166	212	241	301	302	366	325	237	218	65

Cross-Domain Insights

Portfolio & Geographic Patterns

Geographic Activity

- Filings are highest in the United States across domains
- China has a high number of pending to active ratio, indicating acceleration in filings
- Filings in the Europe, Japan, and Korea are steady but at a lower-volume

Portfolio Maturity

- Software tends to have more pending and inactive matters.
- Hardware tends to have more active patents.

Technology & Application Themes

AI-Method Patterns

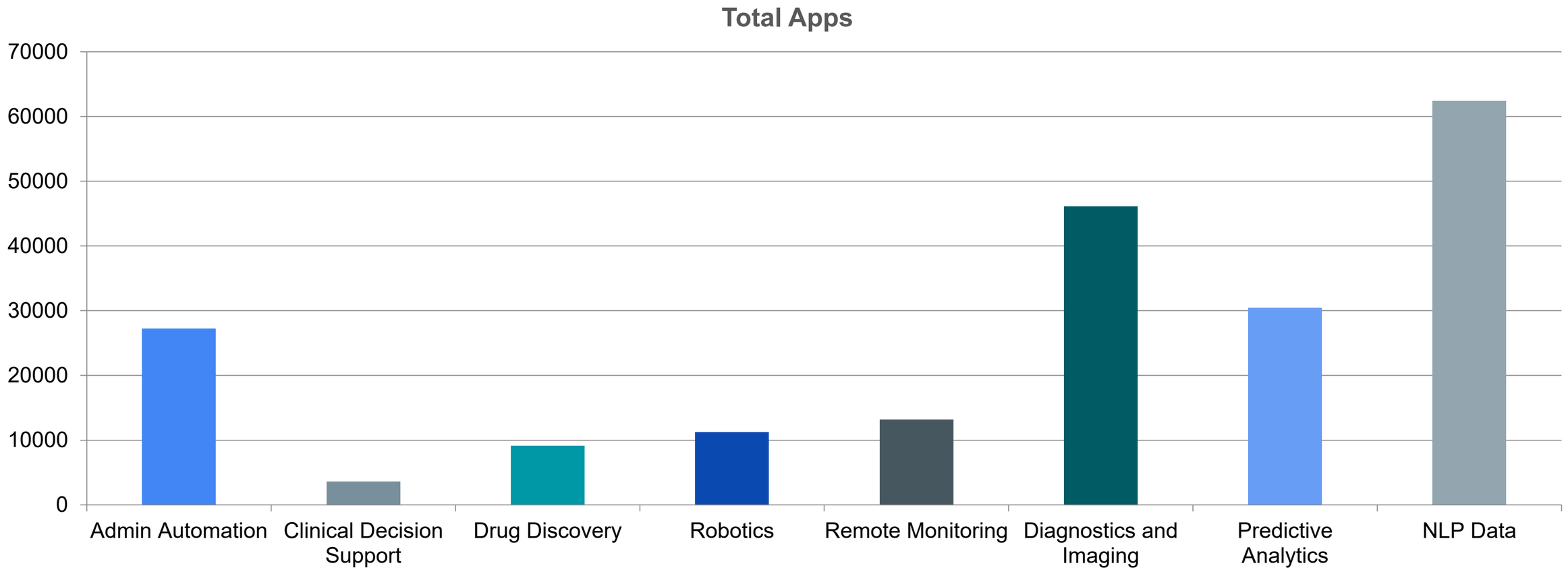
- ML/NN dominate across domains
- Hybrid/Ensemble widely used
- Generative/LLMs emerging

Application-Domain Themes

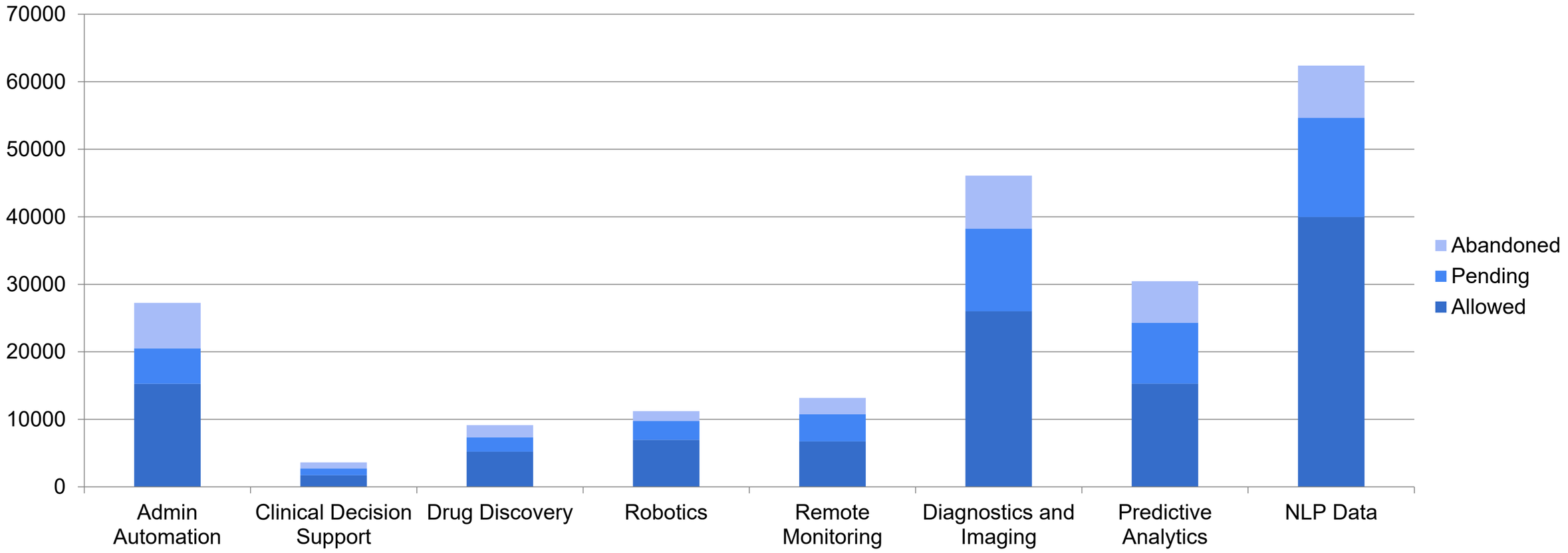
- Automated diagnosis
- Health-index calculation
- Patient-specific data
- Medical data mining
- Image analysis & enhancement

U.S. Prosecution Comparison

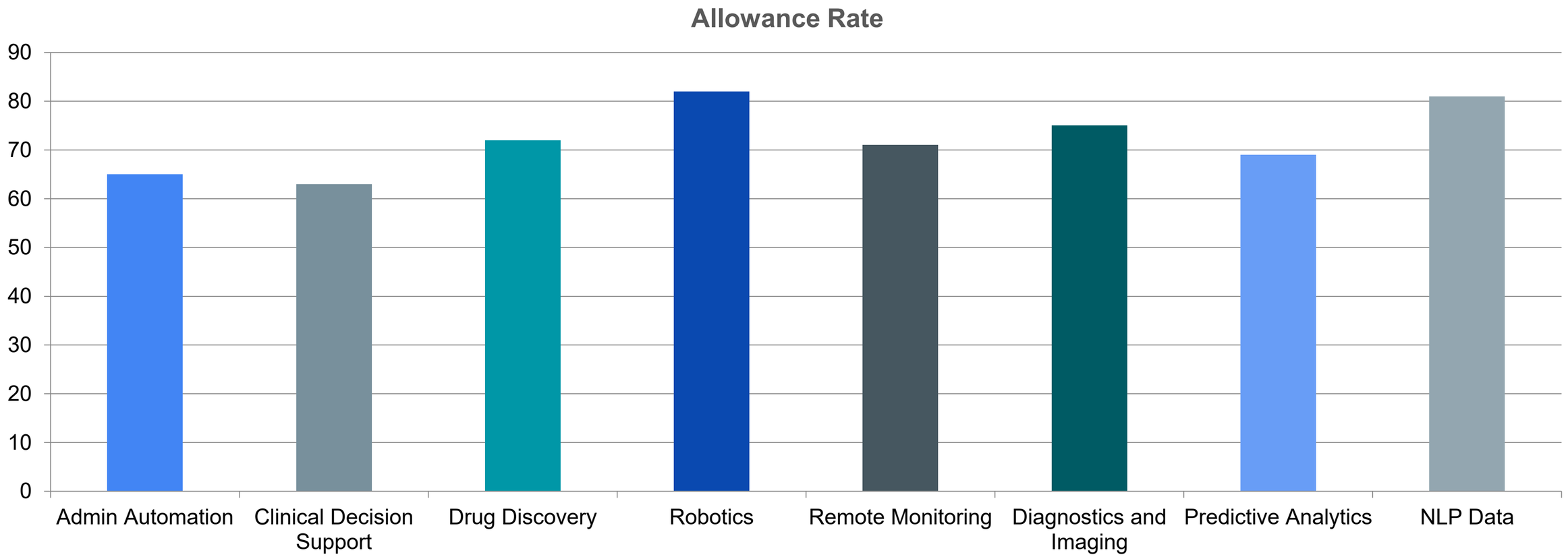
Total Applications



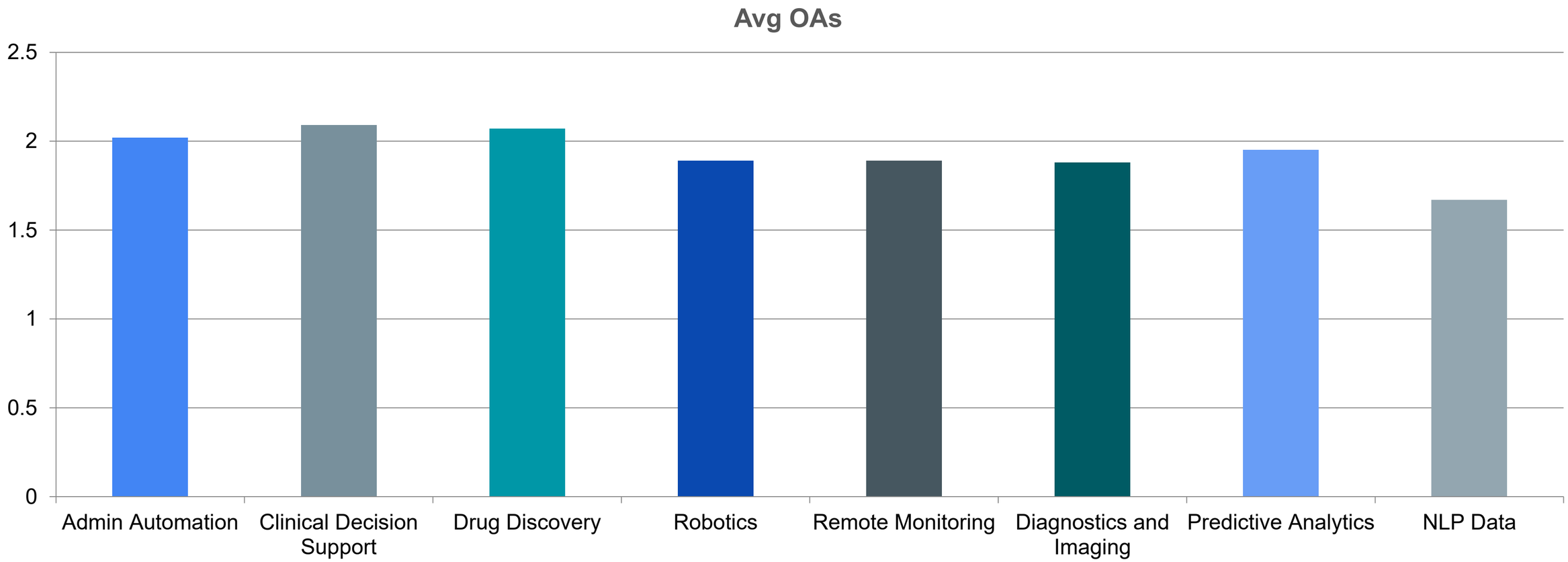
Allowed vs. Pending vs. Abandoned



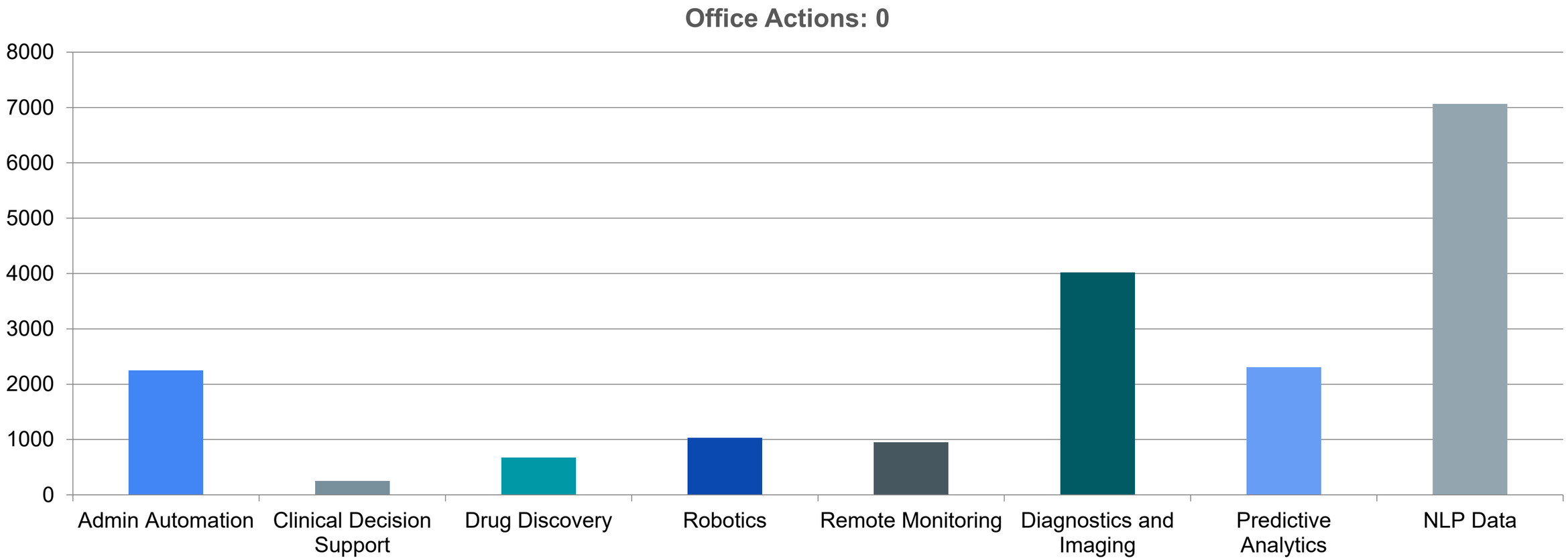
Allowance Rate



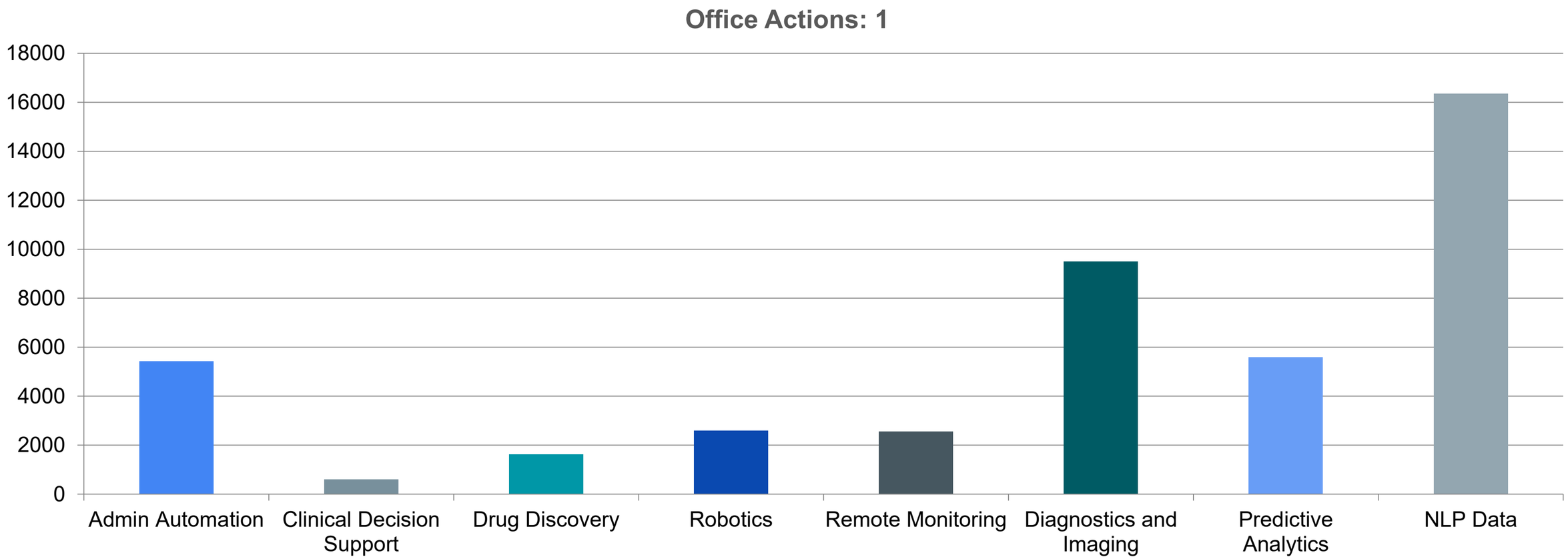
Average Number of Office Actions to Allowance



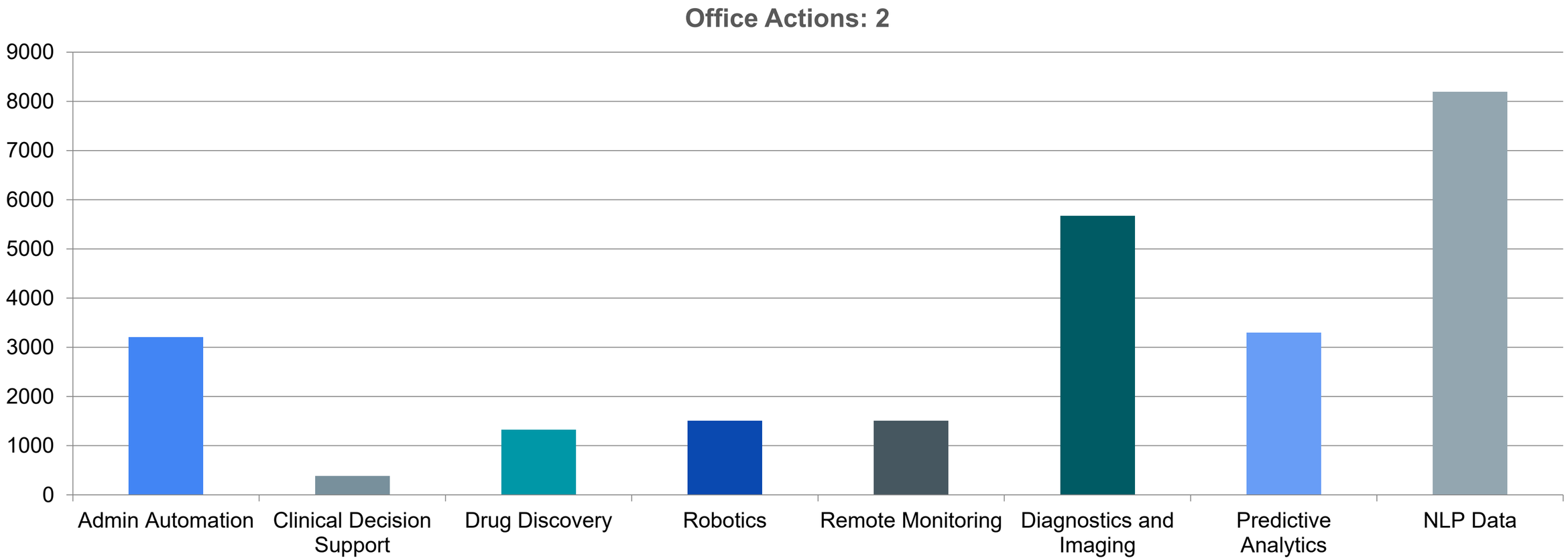
Distribution of Office Actions to Allowance



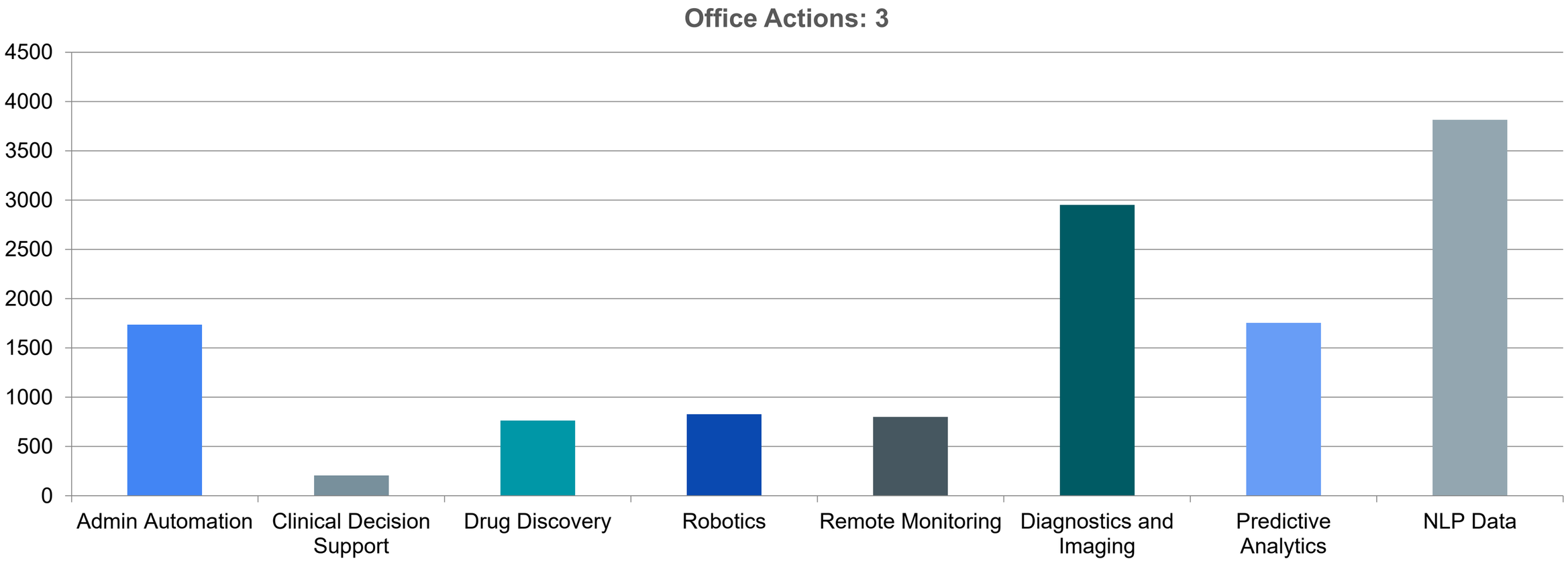
Distribution of Office Actions to Allowance



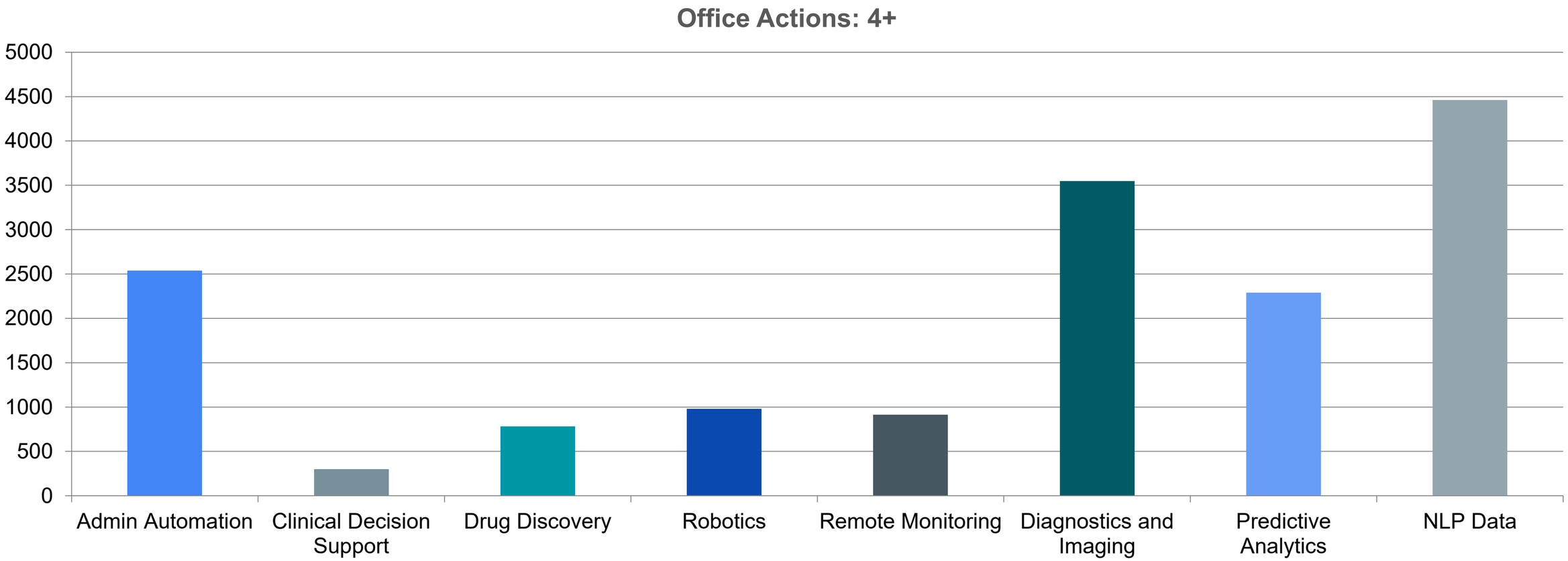
Distribution of Office Actions to Allowance



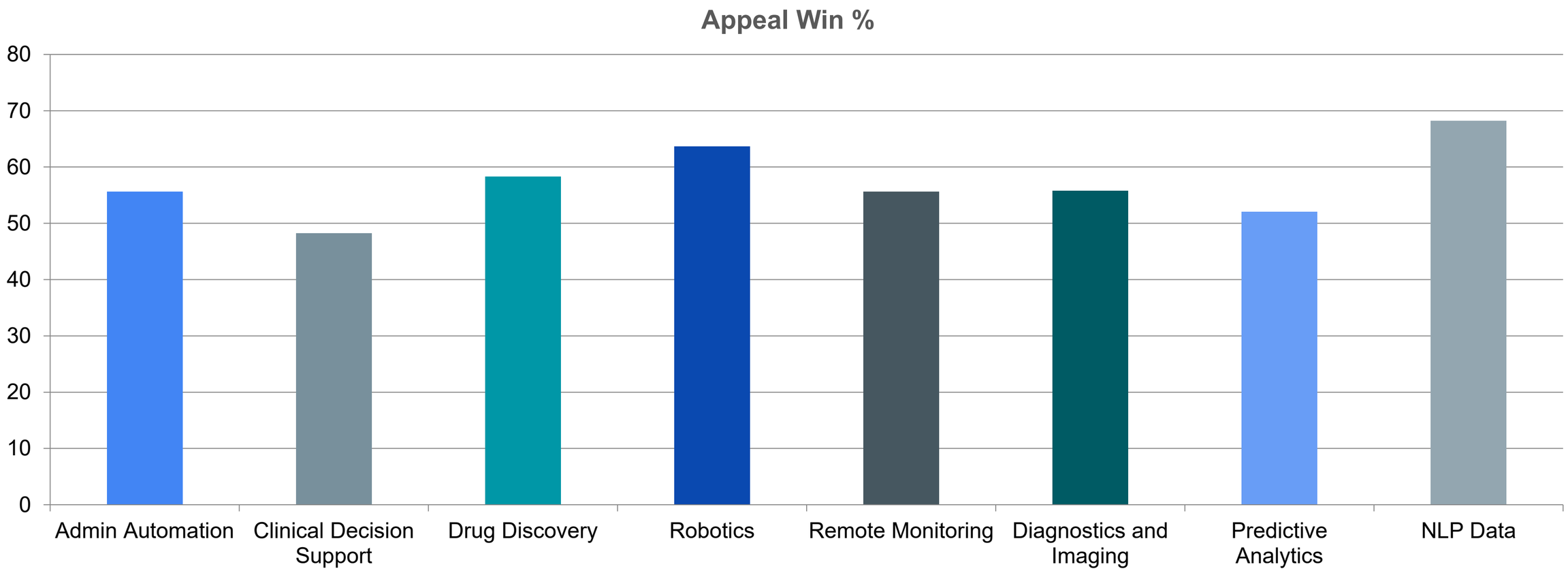
Distribution of Office Actions to Allowance



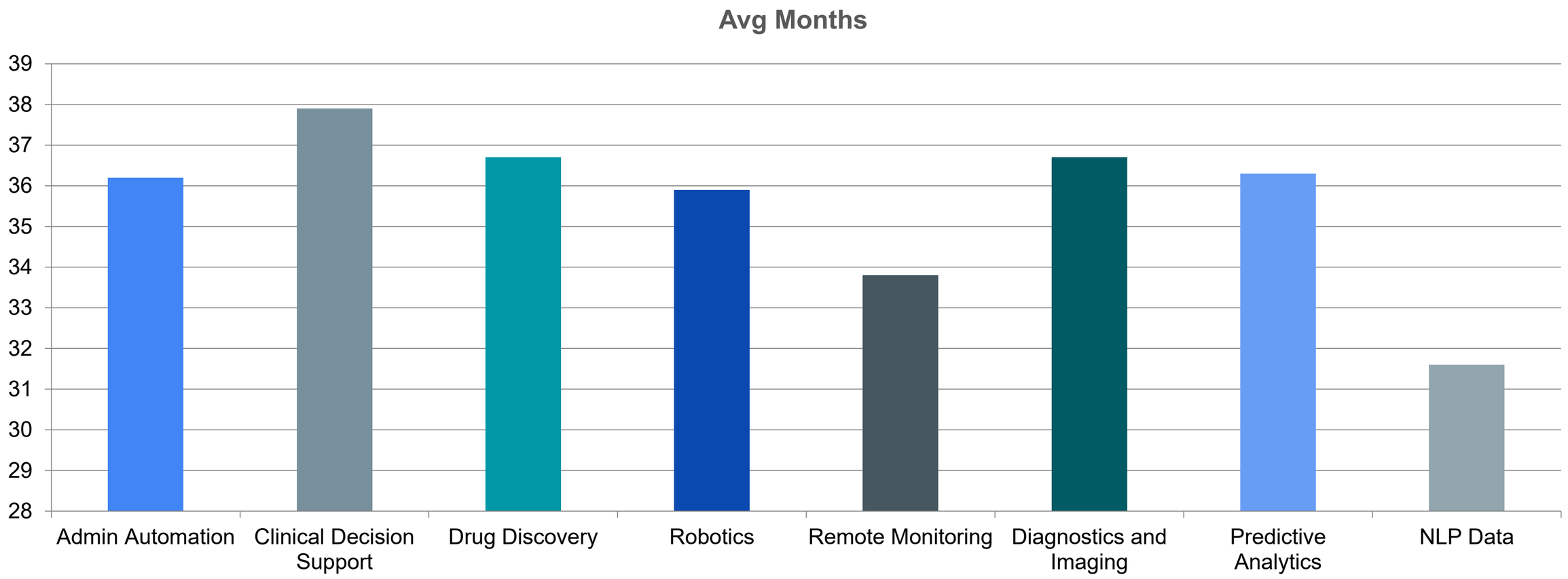
Distribution of Office Actions to Allowance



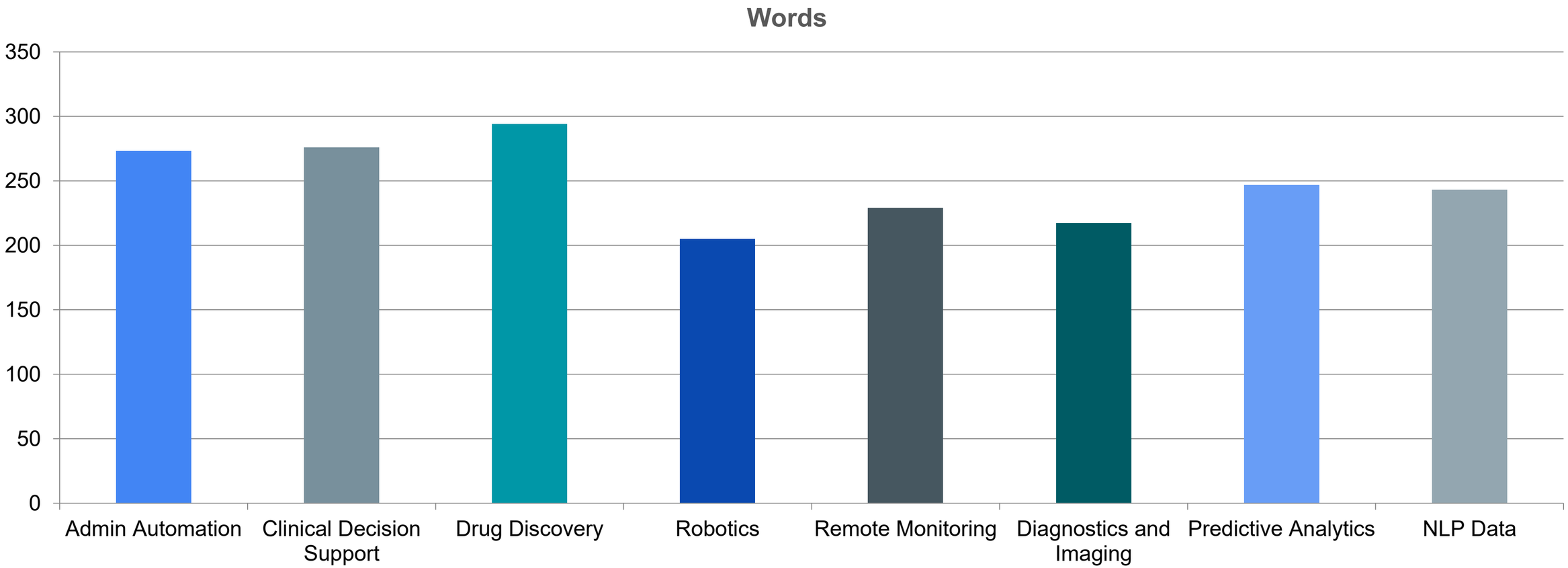
Win Rate on Appeal



Average Time to Disposition (Months)



Average First Claim Length (Word)



Summary & Wrap-Up

AI in MedTech: Where has it been?

- Dominant AI types: ML/NN, Hybrid/Ensemble, Probabilistic/Knowledge-based
- High-activity domains: Automated diagnosis, Image analysis/enhancement
- Trending domains: Patient-specific data, Health-index scoring, Medical data mining
- Growth areas: Biological models, Remote monitoring, NLP for clinical text

Summary & Wrap-Up

AI in MedTech: Where could it be going?

- Rapid rise of NLP, LLMs, and text-based clinical tools
- Emerging generative and foundation models across workflows
- Expansion of multimodal AI (text + imaging + sensor data)
- Growth in patient-specific models and biological simulations

Summary & Wrap-Up

AI in MedTech: Prosecution

- Relatively high allowance rates (~65–82%) across the technical domains
- The number of office actions to allowance seems similar to other MedTech areas.
- Longer claims being allowed, especially in NLP-heavy filings
- Next session—Patent Eligibility Challenges

Thank you

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