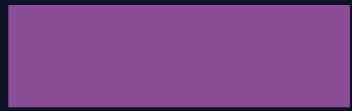


New tools and methods for identifying emerging scientific trends

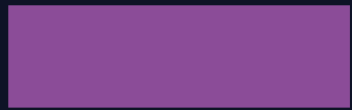
Tim Aitken
Product Manager, Inspec

taitken@theiet.org





Collective knowledge



Societal impact





Truth

Increasing threat to accepted notions of
verification and truth



Real world
outcomes

Learned societies are mission driven



Trust

Libraries custodians of truth



Transition

Libraries evolving with the organizations
they support



Working together



Trusted and independent



50 years

A legacy of excellence

of Inspec

Inspec Abstracting & Indexing Database

Physics



10 million +

Electrical and electronic
engineering



7 million

Computing and control
engineering



5.5 million

Production, manufacturing &
mech. engineering



2.2 million

19m records (Oct 2019)



- **890,000** records added in 2018
- Optional Archive adds another **873,699**
- Over **4,500** journals, and **3,000** other publications from 700 publishers
- Over **10%** open access

1969  **To date**

Or **1898** with the Inspec Archive

Inspec curated
A&I data



Semantic
enrichment



Inspec
knowledge graph

The Knowledge Graph



Welcome to Inspec Analytics

Explore the interconnected data within Inspec to uncover patterns and trends in engineering, computing & physics research to understand your place in a global landscape. With these precision research analytics, you can set the direction for your research outputs and monitor their impact.

Search for an organisation, subject classification or controlled term



27,343

Organisations

Monitor the research output for your organisation and compare trends with collaborators and competitors.

Search for an organisation

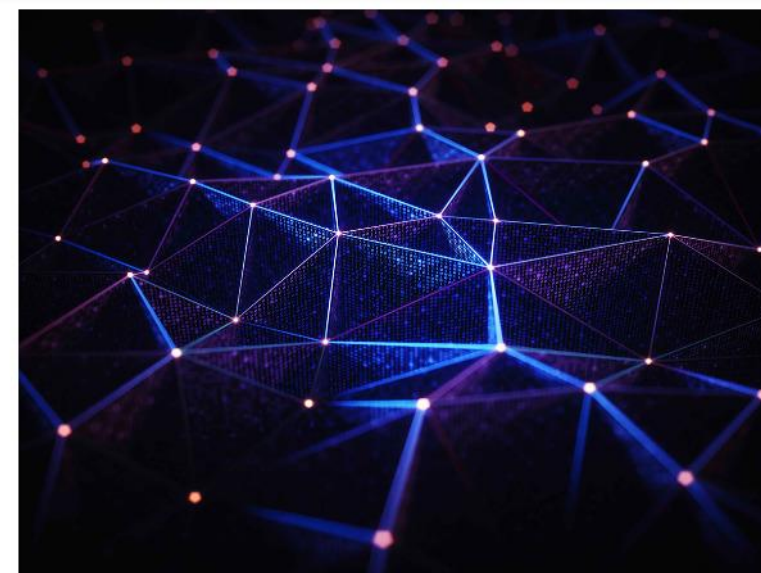


3,521

Subject classifications

Explore our subject classifications to identify global trends for high-level research areas or niche fields.

Search subject classifications



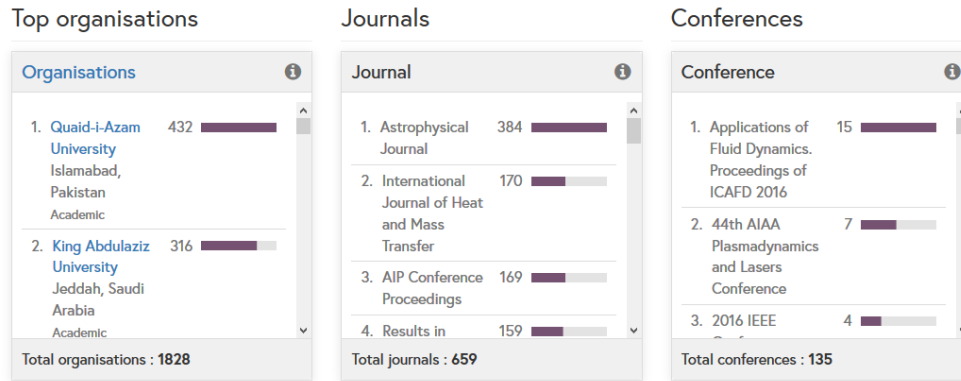
9,967

Controlled terms

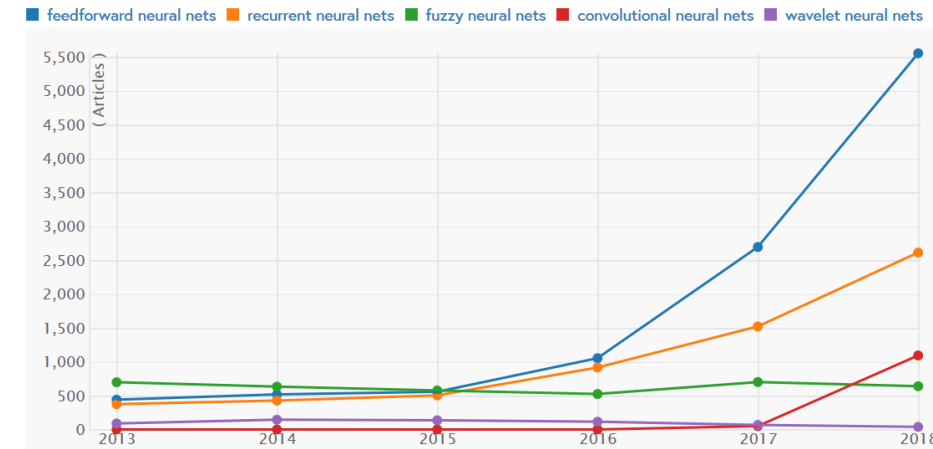
Discover emerging topics related to your field, find collaboration opportunities and identify relevant publications.

Search controlled terms

Inspec Analytics – institutional and research insights

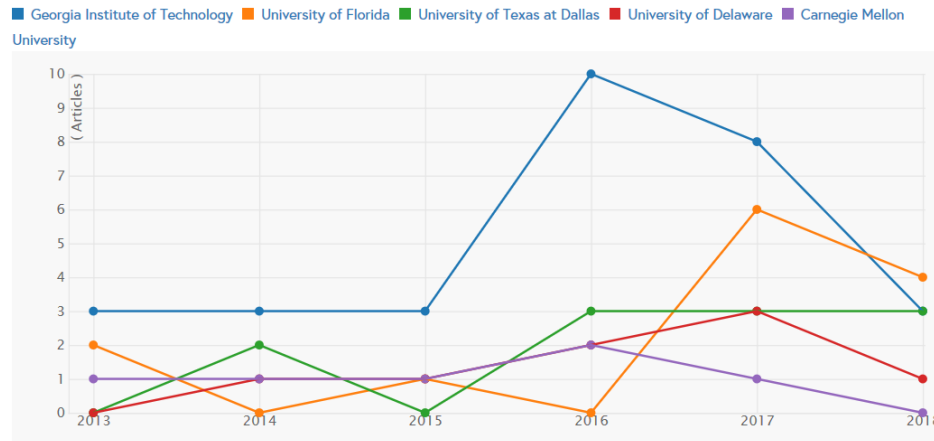


What are the top organisations, journals and conferences publishing on 'magnetohydrodynamics'?



Which type of neural net is showing strongest growth in publications?

IET Inspec



#	Controlled term	Articles
1	silicon	324
2	silicon compounds	198
3	carbon compounds	100
4	gallium compounds	79
5	lithium compounds	63
6	indium compounds	60
7	cadmium compounds	53
8	copper compounds	45
9	organic compounds	12
10	nitrogen compounds	10
11	sulphur compounds	10

Which chemical compounds are most commonly referenced alongside photovoltaic power systems?

Which US universities have collaborated with Huawei

Organisational Trends

Identify trends within specific areas of research at an organisation:
e.g. Astronomical radiosources

Home > Organisations > University of Cambridge > Controlled terms

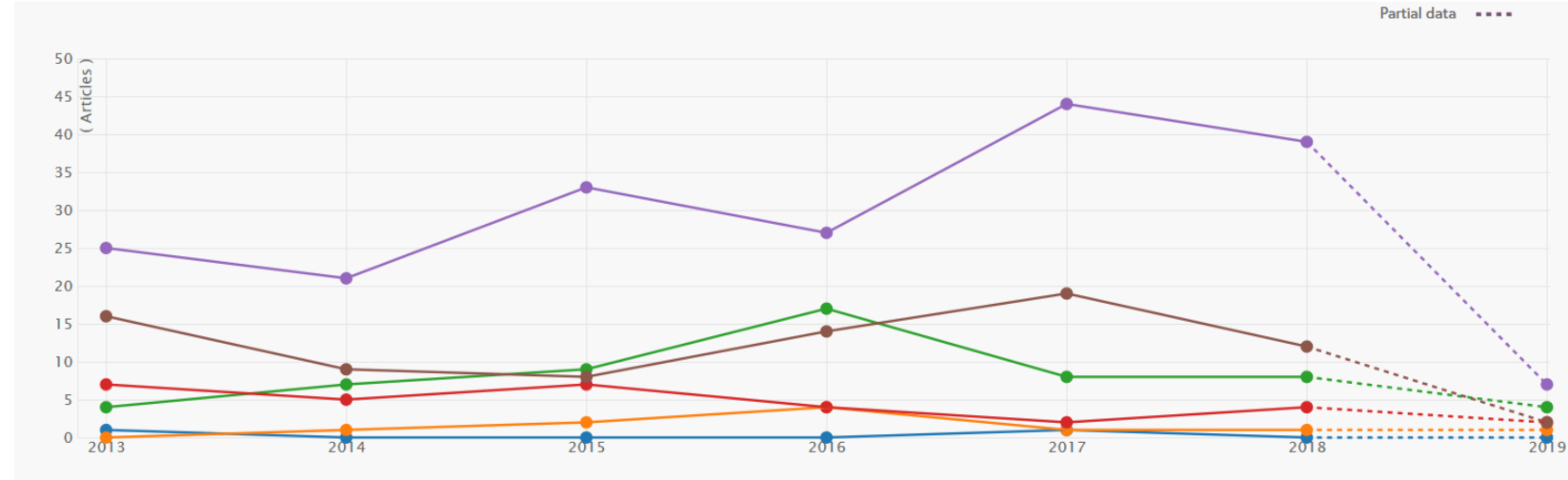
Controlled terms for University of Cambridge

Export

From 2013 To 2019

Trend Chart Histogram

astronomical masers BL Lac-type objects pulsars quasars radiogalaxies radiosources (astronomical)



Update graph 6

Advanced Filter ON

edit

✓	#	Controlled term	Articles	Authors	Global rank (Rank applicable from 2013 - 2019)
✓	1	astronomical masers Including: OH Type I sources	2	3	170 of 355
✓	2	BL Lac-type objects Including: BL Lacertae-type objects	10	12	128 of 557
✓	3	pulsars Including: millisecond pulsars	57	66	29 of 895
✓	4	quasars	196	229	6 of 942
✓	5	radiogalaxies	31	50	26 of 584
✓	6	radiosources (astronomical)	80	159	19 of 947

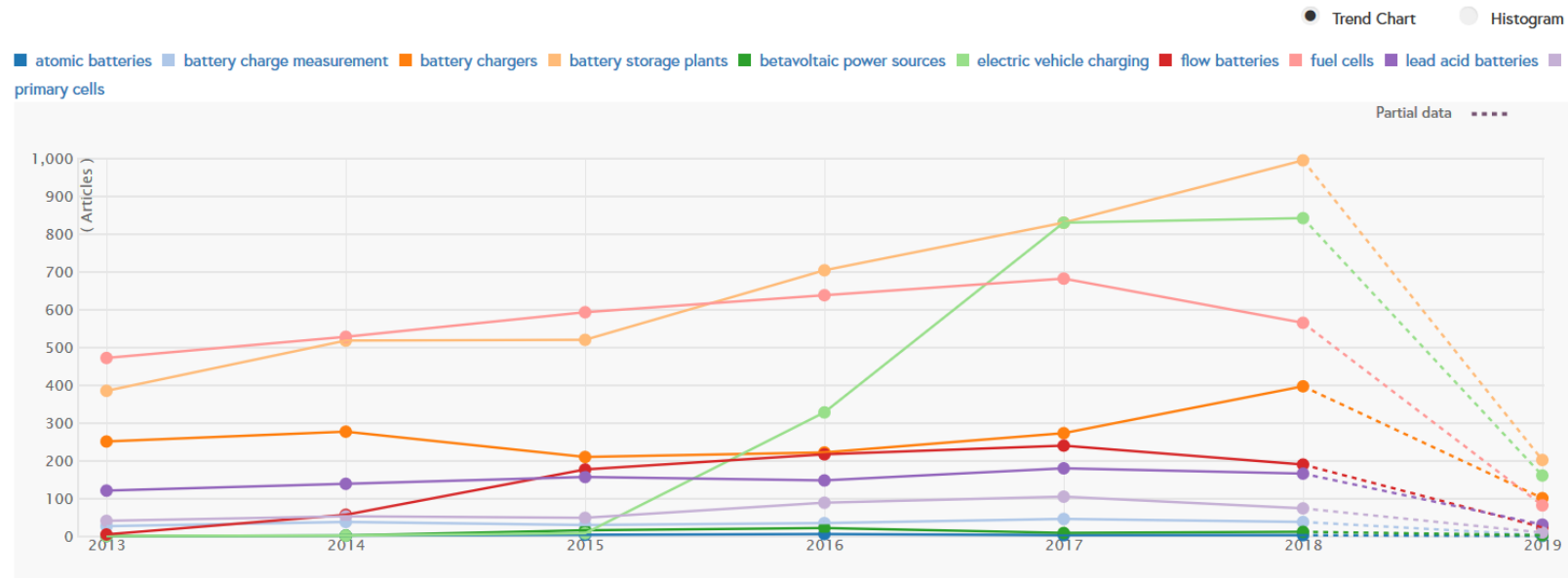
Global Trends

See global trends
in battery-based
research

Home > Controlled terms

Controlled terms

Export



Update graph 10

batter

x Q

Advanced

<input type="checkbox"/>	#	Controlled term	Articles	% Change 2013-2018	Co-occurring controlled terms	Co-occurring subject classifications	Organisations	Journals	Conferences
<input checked="" type="checkbox"/>	1	flow batteries	903	4625% ▲	739	499	458	143	64
<input checked="" type="checkbox"/>	2	battery storage plants	4147	158.85% ▲	1095	520	1448	294	821
<input type="checkbox"/>	3	battery powered vehicles	7229	122.11% ▲	1953	796	1932	565	1261
<input type="checkbox"/>	4	battery management systems	2762	121.96% ▲	1349	696	1095	311	719
<input type="checkbox"/>	5	secondary cells Including: rechargeable batteries	36547	104.24% ▲	4061	1756	3539	1231	1804
<input checked="" type="checkbox"/>	6	primary cells Including: batteries	414	82.5% ▲	914	668	397	166	58
<input type="checkbox"/>	7	lithium compounds Including: lithium batteries	31118	74.34% ▲	4558	2125	3632	1197	819
<input checked="" type="checkbox"/>	8	battery chargers	1724	58.4% ▲	959	508	891	182	562

Detailed concept exploration

Mega-trends such as AI can be explored:

To what type of neural nets are under research?

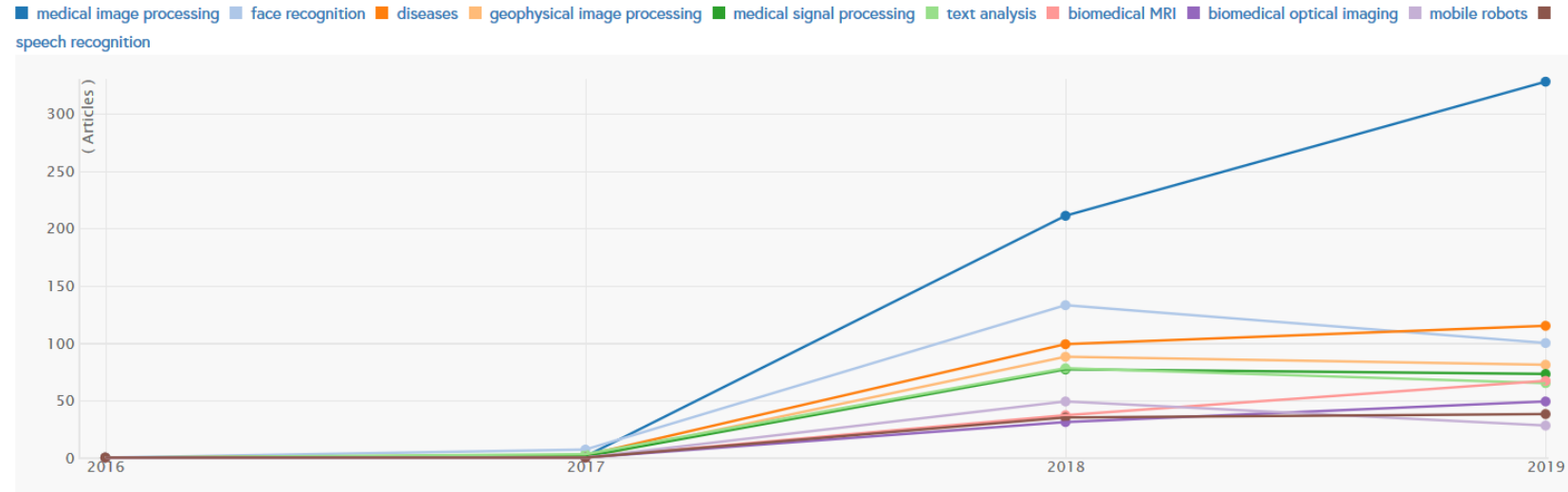
And who is doing the research?

And what are they used for?

Co-occurring controlled terms for convolutional neural nets

Export

From 2016 To 2019



Update graph 10

Advanced Filter ON [edit](#)

	#	Controlled term	Articles
<input checked="" type="checkbox"/>	1	medical image processing	540
		Including: biomedical image processing	
<input checked="" type="checkbox"/>	2	face recognition	240
<input checked="" type="checkbox"/>	3	diseases	216
<input checked="" type="checkbox"/>	4	geophysical image processing	169
<input checked="" type="checkbox"/>	5	medical signal processing	151
		Including: biomedical signal processing	
<input checked="" type="checkbox"/>	6	text analysis	146
<input checked="" type="checkbox"/>	7	biomedical MRI	104
<input checked="" type="checkbox"/>	8	biomedical optical imaging	80
<input checked="" type="checkbox"/>	9	mobile robots	77
		Including: autonomous land vehicles	

$$\text{Li}^{\text{FeV}}$$

top uncontrolled terms

A word cloud containing terms such as "field", "Kaman", "electron", "properties", "min", "proper", "gas", "transport", and "semiconductor". The words are arranged in a dense, overlapping manner with varying font sizes and orientations.

top uncontrolled terms

Inspec Analytics

Organisation Profile	Monitor your output over time	Compare institutions and monitor collaborations	Explore research trends and find collaborators
<p>Get a snapshot of your organisation's research output or see how your peers are doing.</p> <p>Monitor publishing output and discover your global ranking for specific topics.</p>	<p>Explore specific subject areas to discover how an organisation's research output has changed over time.</p>	<p>Compare organisations' research output side by side.</p> <p>Highlight areas of strength in research and identify areas for growth.</p> <p>Monitor collaborations with industry to demonstrate impact.</p>	<p>Explore specific subjects and discover related areas.</p> <p>Identify emerging trends and plan where to focus your resources.</p> <p>Identify the most prolific universities to find collaborators.</p>

Questions?

(or Lunch...)

Tim Aitken

Product Manager, Inspec