
HARNESSING THE POWER OF AI

THE DEMAND FOR FUTURE SKILLS

INTRODUCTION



Artificial intelligence (AI) technologies are developing at pace, and offer the promise of boosting productivity and creating new and revolutionary products and services.

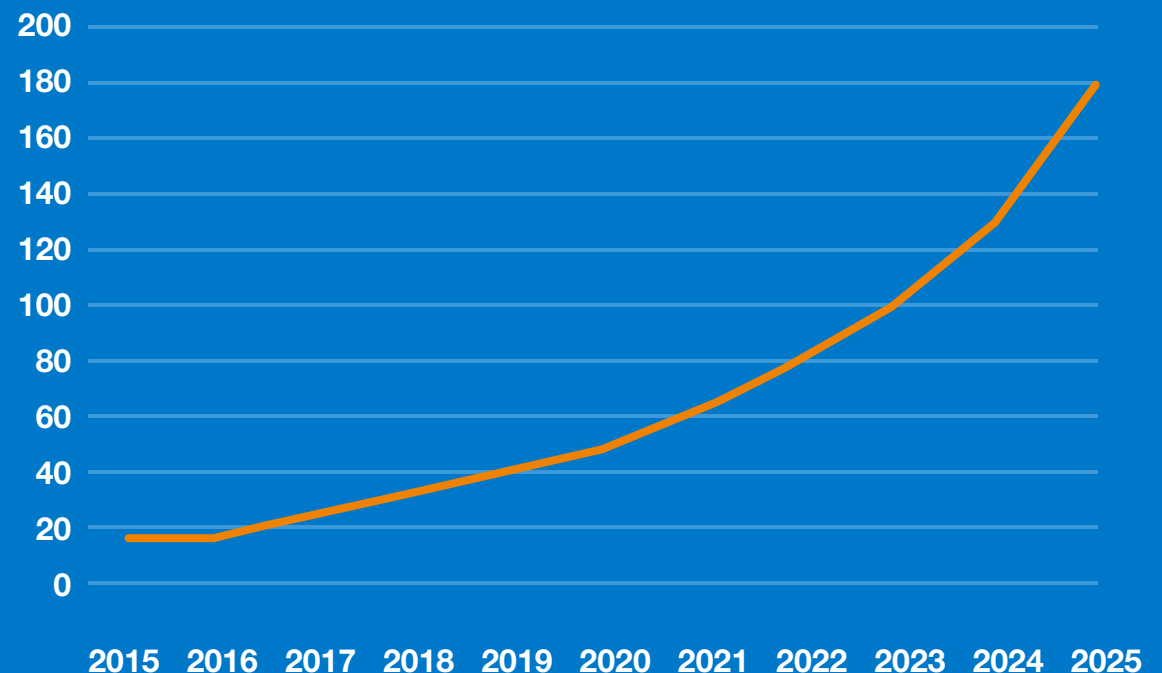
Whilst the debate over automation and the future of work remains unsettled, there is a general consensus that AI will have a disruptive effect on work - with some jobs being lost, others being created, and others changing.

According to the British Academy around 10–30% of jobs in the UK are highly automatable – and therefore at risk to ‘change’ as a result of the emergence of AI (1).

In September 2018, Bank of England Governor Mark Carney gave a speech in Dublin where he argued that in advanced economies, labour markets are already polarising and changing drastically as a result of early stage automation and digitisation.

Robert Walters and VacancySoft have partnered together to deliver Harnessing the Power of AI – the Demand for Future Skills, an extensive analysis into hiring trends for industries embracing AI. The following report identifies how the take-up of AI by commerce and industry is disrupting the labour market, the hotspot areas of demand for businesses joining the race to exploit it, and expectations for market growth in an uncertain economic and political landscape.

GLOBAL DATASPHERE SIZE (ZETTABYTE)



1 The British Academy (2018), The impact of artificial intelligence on work



CHAPTERS

THE RACE TO ADAPT

HIGHEST IMPACT AREAS

JOB GROWTH & EMERGING ROLES

GROWTH OF SPECIALIST AI COMPANIES

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THE RACE TO ADAPT



The structural shift in the labour market can be attributed to the technological displacement of mid-skilled jobs. Data illustrates that employment growth has been greatest at the extreme ends of the spectrum (top and bottom 20%) whilst in-between there has been a decline, resulting in a hollowing out of jobs for the middle-tier workforce – becoming known as the ‘automation paradox’.

According to a 2018 report by World Economic Forum, machines and algorithms in the workplace are expected to create 133 million new roles, but cause 75 million jobs to be displaced by 2020 (2). The opportunity to be had for businesses leading the charge with AI is reshaping the existing workforce to develop more data-driven skill sets, and deploying talent that can engage with automated ways of working.

As businesses become ever more reliant on AI, there is an increasing amount of pressure on the processes of data capture and integration. However, the businesses that are prepared to invest heavily in AI and data analytics are already outperforming their competitors.

2 World Economic Forum (2018), Future of Jobs Report

A man in a checkered shirt and dark tie is looking down at a tablet device. The background is dark with out-of-focus, colorful bokeh lights in shades of orange, yellow, and red.

133M

AI is predicted to create 133 million new jobs by 2020 globally

HIGHEST IMPACT AREAS



AI: IN INDUSTRY

The uptake of AI across multiple industries is creating 'next generation' jobs defined by having data skill sets at their core. Particularly, we are seeing retail, professional services and technology industries strive to develop digital products and services that are digitally engaging, secure and instantaneous for the customer - leading to huge waves of recruitment of professionals who are skilled in implementing, monitoring and gaining the desired output from facial recognition, check-out free retail and computer vision, among other automation technologies.

Similarly, experimental AI is making huge breakthroughs in the healthcare industry, with the power to replace the need for human, expert diagnoses.

The AI takeover in commerce & industry has led way to a staggering knock-on effect seen in the skyrocketing demand for data professionals - could such an irreversible reliance on AI could bring the hiring market to tipping point?

TOP INDUSTRIES INVESTING IN AI*



1. Agriculture



2. Business Support



3. Customer Experience



4. Energy



5. Healthcare



6. Intellectual Property



7. IT Service Management



8. Manufacturing



9. Technical Support



10. Retail



11. Software Development

*CMS Wire (2018), 11 Industries Being Disrupted By AI

AREAS EXPECTED TO DRIVE HIRING IN 2020:

1. 5G
2. Edge Computing
3. Digital Twin

AI: IN PRACTICE

When Google acquired Deepmind it did so, not to turn a quick profit, but to take a leading seat at the table of AI, which is often considered the Manhattan Project of computing. The stated mission of Deepmind is to transform society through the use of AI for the better. As the leading technology entity for AI, we quickly can see the potential that is emerging.

For example, in a recent pilot trial between Deepmind and Moorfields Eye Hospital in London, AI was used to analyse the OCT scans produced by different imaging systems and make referral decisions for patients. The results were startling. Even when leading specialists had the benefit of notes and other images not made available to Deepmind, they could only match the performance of the AI.

Insofar that Deepmind is perhaps more revolutionary in its objectives, other businesses are also looking to integrate AI into their core proposition through technology investment.

While the motivations to implement AI may differ between industries, all lead towards more aggressive hiring of data professionals, where the most explosive growth has been witnessed in 2019. For example, take SAP or Microsoft Dynamics, both business management and data analytics tools designed to help clients be more profitable. However, once again, with this, the effectiveness of such tools is dependent on data management and quality.

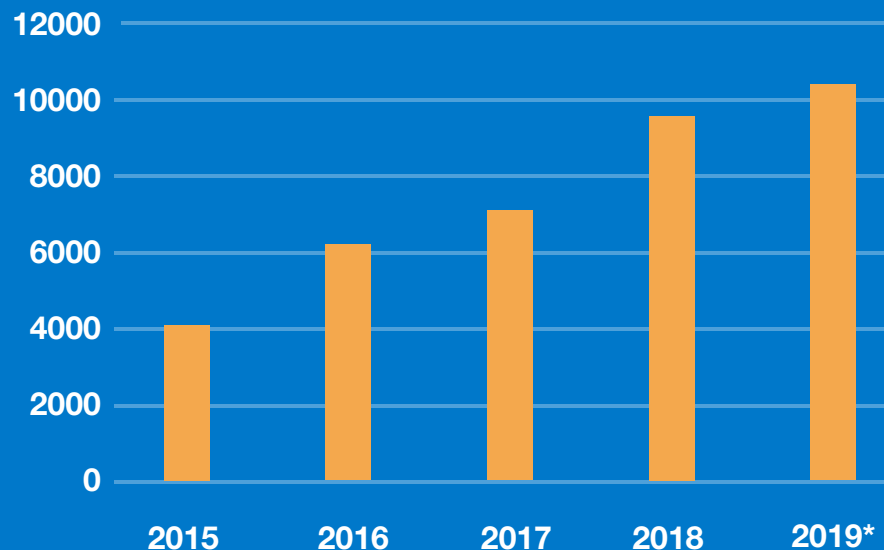
JOB GROWTH & EMERGING ROLES



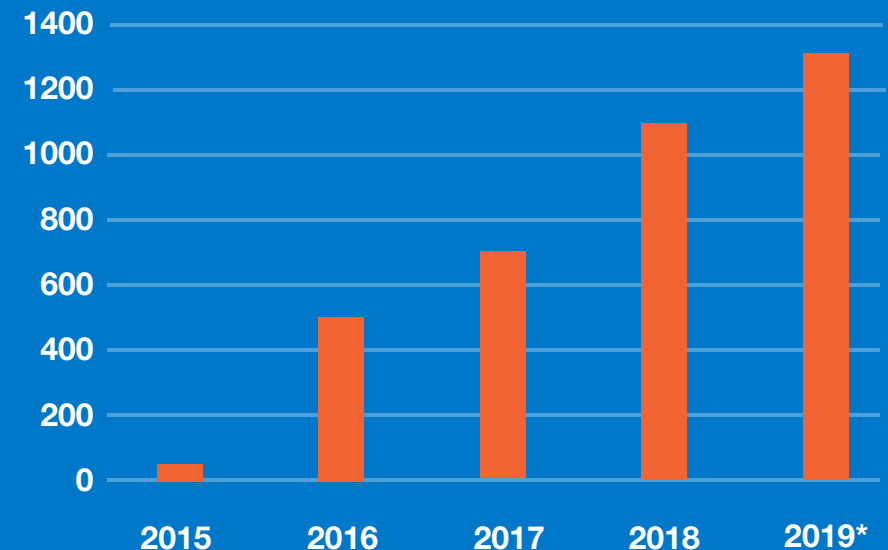
This pace of change and presence of AI and digitisation is materialising the most when we look at job vacancy growth. For example:

- Specialist data science & analytics roles have increased by 160% within medium to large companies in the UK between 2015 and 2019.
- Data scientist roles have surged to become mainstream professional positions, with vacancies up from just - a staggering 110% year-on-year increase. The same trend can be seen with Data Engineers, averaging 86% year-on-year growth.
- Job growth for information security has leveled-out after what was a active recruitment period in the lead-up to the GDPR deadline.

IT VACANCY GROWTH



DATA SCIENTIST VACANCY GROWTH



*Projected according to half-year figures

GREATEST INCREASE IN DEMAND



DATA MANAGER
64.2% INCREASE IN DEMAND

HOTSPOT ROLES: PROFESSIONAL SERVICES

As AI becomes more powerful, this reliance means that professional service firms have also been hiring ever increasing numbers of data professionals, where key trends include:

- Vacancies for general data professionals have increased by 79.5% since 2015, with key areas of growth including data scientists and engineers.
- The rise of cyber crime has resulted in professional services - particularly financial services - hiring aggressively for information security professionals since 2016, however since then volumes have held steady.
- IT professionals dedicated to data management seem to be the fastest growing area within large or global entities, with volumes increasing ten-fold in three years. This is the most visible sign of the importance firms are placing on improving data quality to enable more effective AI.

TOP 5 JOB FUNCTIONS – PROFESSIONAL SERVICES

Rank	Skill set	2018	2019	YOY growth (%)
1	Data Analyst	482	576	19.5%
2	Data Manager	246	404	64.2%
3	Data Scientist	118	152	28.8%
4	Information Security Manager	148	148	0.0%
5	Data Engineer	79	128	62.0%



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The AI explosion in industry has led to the development of specialist AI roles seeking AI or machine learning skills - in addition to core data-driven roles that require AI understanding. We're seeing roles such as Machine Learning Engineers, Computer Vision Engineers and Algorithm Engineers appear in the capital, as well as regional tech hubs - vacancies that have made their way from Silicon Valley.

OLLIE SEXTON, PRINCIPAL, ROBERT WALTERS

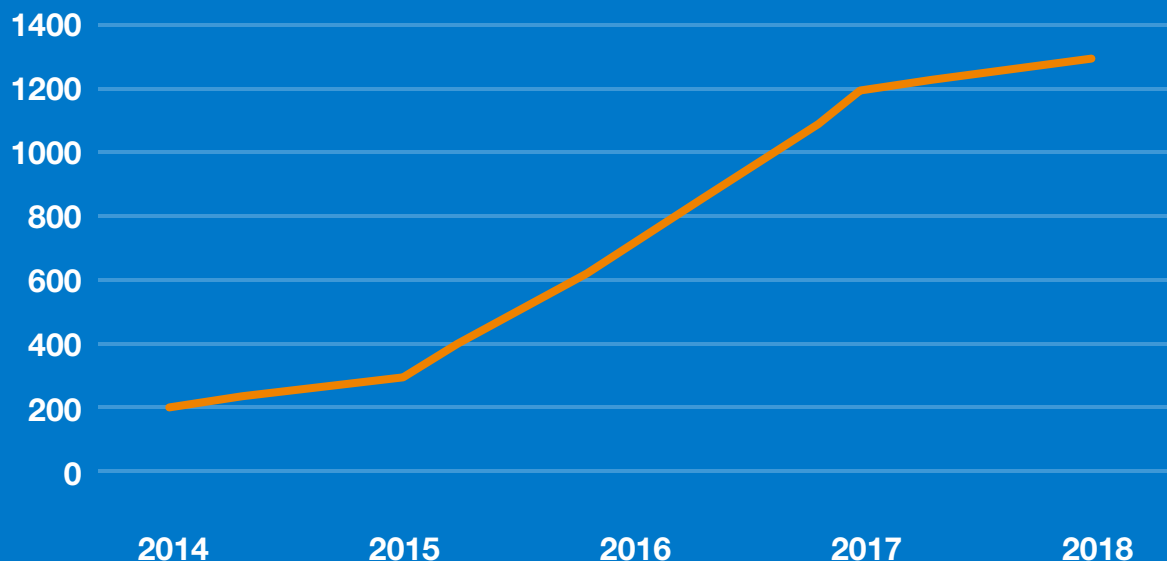
GROWTH OF AI SPECIALIST COMPANIES

VC FUNDING

Across Industry, businesses are exploring the potential of AI and wondering how they can tap into this for their own advantage. With this, we are seeing the emergence of a new niche sector within the technology industry, of specialist AI companies. The establishment of an AI sector is accompanied by significant VC funding growth into the sector, with total deals in the UK having increased from \$200m in 2014 to \$1.3 BN last year.

This almost seven-fold increase in five years is, in many ways, a function of the arms race now at play across corporations. As FTSE 250s start to address their data issues, they are now looking for solutions that can help them harness the power of the data they now hold and utilize it.

VC FUNDING INTO AI-DEDICATED BUSINESSES - UK



SPOTLIGHT ON: AI SPECIALISTS

This is leading to an explosion in recruitment into specialist researchers into Artificial Intelligence. Where this area was once an obscure niche, now hundreds of technology businesses are actively recruiting for specialists in developing AI algorithms, shifting the market so demand is now outstripping supply.

This trend is witnessed with the substantial growth in specialist positions within the AI ecosystem, including machine learning, NLP, geospatial analysis, AI research and applied data science vacancies, where we have seen increases from 445 in 2015, to over 4,000 estimated this year. The question is, is there sufficient talent to meet demand and if not, how will the skill shortage be addressed?

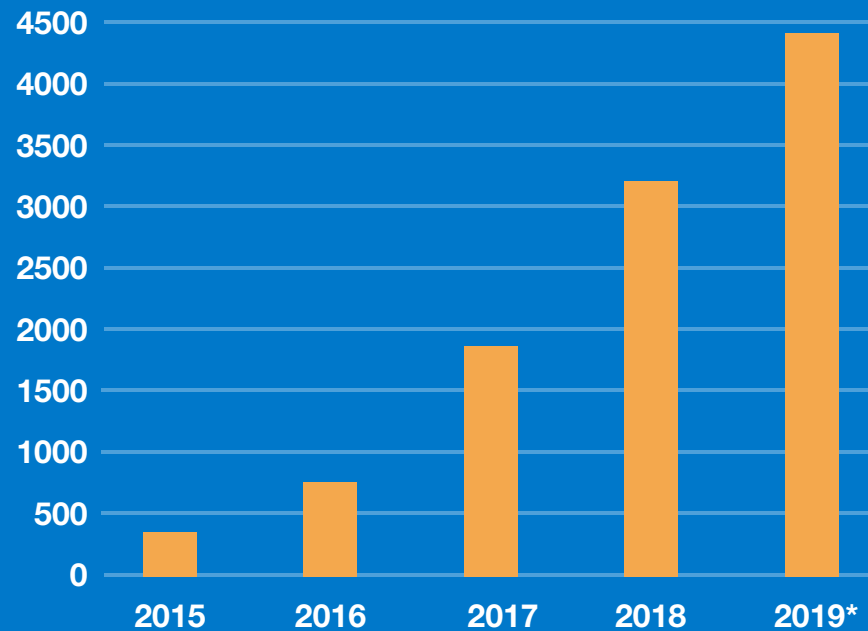


**AI VACANCIES ARE ON
TRACK TO GROW BY 37%
IN 2019**



On the one hand, Brexit threatens the freedom of movement necessary for businesses to attract people from across the continent. On the other hand, the new Prime Minister has stated that the policy of the government will be to make it as easy as possible for business to attract the scientists and engineers needed to keep the UK at the forefront of R&D.

SPECIALIST VACANCIES IN THE AI ECOSYSTEM



*Projected according to half-year figures



ONES TO WATCH: TOTAL FUNDING FOR THE UK'S TOP AI STARTUPS*

1. Graphcore	£244m
2. Darktrace	£173m
3. Benevolentai	£136m
4. Behavox	£74m
5. Roborace	£66m
7. Babylon	£64m
8. Featurespace	£54m
9. Tessian	£44m
10. Complyadvantage	£38m
11. Patsnap	£38m

*Beauhurst (2019): The UK's Top AI Startups

95%

Data Scientist roles increased by 95% this year



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Edge AI is having a huge impact on AI investment as businesses cater for real-time decision making - from facial recognition on smartphones, to driverless vehicles responding to the road in real-time to instantaneous medical imaging.

These real-time needs are leading businesses to make the leap into the international hiring pool in search of specialist AI and Machine Learning skills.

**TOM CHAMBERS, MANAGER - APPLIED ANALYTICS, AI RESEARCH & ENGINEERING,
ROBERT WALTERS**

CONCLUSION



While the data points towards a sustained AI job boom, political uncertainty makes 2020 projections difficult to ascertain. While it's clear that UK businesses are making investments to be at the forefront of AI, contractions in the candidate market due to a hard-border Brexit could cause the AI market to grow at a more laboured pace.

With sectors including cyber security, healthcare and manufacturing, and emerging AI businesses leading the way with recruitment, cultivating the current talent pool of applied data science and analytics professionals should be a prime concern for organisations looking to reap the gains in profitability and innovation that AI brings.

KEY TAKEAWAYS

- Demand for data and analytics talent is driven by industries leading the way in AI implementation, including retail, professional services and industrial goods and services.
- AI recruitment relies heavily on having access to a global talent pool - upskilling talent and restructuring learning programmes will need to be considered if the talent pool diminishes due to Brexit.
- AI is triggering massive shake-ups in recruitment - with displacement of mid-skilled talent coupled with specialist AI job creation. But will AI create more jobs than it replaces?
- An emerging sector dedicated to AI is attracting significant VC funding, creating specialist roles including machine learning and computer vision engineers - all of which are on track to grow considerably this year.





ABOUT THE PARTNERS

ROBERT WALTERS

Powering people and organisations to fulfil their unique potential.

Robert Walters is a global, specialist professional recruitment consultancy. Operating across 30 countries, with offices in AI hubs London, San Francisco and Beijing, organisations rely on us to find high quality professionals for a range of specialist roles. Leaders in technology recruitment, we place specialist in AI research and data science on a permanent, contract and interim basis in organisations ranging from the largest corporates world-wide, through to SMEs and start-ups.

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