

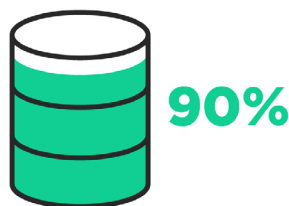
12 Artificial Intelligence

AI for an intelligent candidate journey

Since the introduction of the first personal computers in the early 1980s, humans have roughly doubled the amount of data created every two years. Fast forward to today, and we have created over 33 zettabytes of data¹ and 90% of that data has been created over the last two years². It's estimated that by 2025, we will be producing as much data in a single week as we did in the first 30 years of the home computer revolution³.

The Quantity of Data Available

AI requires large quantities of data in order to identify patterns and make predictions. 90% of all human-created data has been created in the last two years.



It's not just the volume of data that is increasing; the complexity of the data is also increasing. Before smartphones the data we created tended to be simple and well structured; with smartphones we are creating more complex data more frequently, such as videos, tweets, hashtags, 'likes' and social network connections. Due to this increase in volume, our traditional methods of gaining insight from data like video, voice, or social media can struggle, or fail to work altogether. The need to gain insights from this huge volume of complex data has given birth to new approaches, such as artificial intelligence, to process and extract meaning.

¹ Reinsel et al., *Data Age 2025*.

² Marr, "How Much Data Do We Create Every Day".

³ IDC, "Data Growth, Business Opportunities, and the IT Imperatives".

But what is artificial intelligence?

Artificial intelligence (AI) is generally understood to be the capacity of a computer to perform a task typically requiring a level of human intelligence. Some types of artificially intelligent systems rely on machine learning, which is when an algorithm is trained on a set of data identifying patterns and forming the basis for prediction.

One of the most influential and ambitious research efforts around artificial intelligence, the Stanford One Hundred Year Study on Artificial Intelligence (AI100) points out that the lack of a precise, universally accepted definition of AI probably has helped the field to grow, blossom, and advance at an ever-accelerating pace.⁴ The general sense of pursuing a human-like level of processing and perception is enough to drive the field of research and uncover practical applications.⁵

Artificially intelligent machines have been the focus of science fiction for decades, being cast in a range of roles from villains to heroes, and even as companions or friends but AI has begun the shift from science fiction to reality. Part of this is due to the recent developments in the technology known as deep neural networks (DNN's) and data modelling. This is the process of training an algorithm on existing data to make predictions from that data or about similar data in the future.

Deep neural networks use layers of artificial neurons to create a miniature brain that specialises in performing a particular task. This layered architecture means computer systems can process information and make decisions in similar ways to humans. DNN's tend to excel at very specialised and simple tasks that are repetitive. For example, they are very good at automatically identifying different objects in images. Deep neural networks have revolutionised the fields of computer vision, natural language processing, and data analysis.⁶

⁴ Stone et al. *One Hundred Year Study on Artificial Intelligence*.

⁵ Eubanks, *Artificial Intelligence for HR*.

⁶ LeCun et al., "Deep Learning," 436-444

Artificially intelligent systems are not just limited to organisations that can develop or outright purchase them; it is also possible to have AI as a service (AIaaS). 'As a service' refers to software that can be used across a network because it uses cloud computing. This approach allows companies to utilise the power of AI and machine learning at significantly lower costs and without having to invest time and developers to create it.⁷ AIaaS can be a good way for companies to determine if the AI system is the right fit for projects and their organisations, and they can work on their core business at the same time.

Artificial intelligence already spans many industries, ranging from transportation, healthcare, and HR. In Deloitte's 2018 report on Global Human Capital Trends⁸, 47% of organisations reported investing in automating some tasks, and 40% of respondents are explicitly using AI and robots to perform routine tasks or augment human skills.

Rise of AI which is not AI

It can be hard to identify what is an artificially intelligent system and what is simply automation. Automation is where an algorithm or system follows a rule and artificial intelligence is where systems will develop their own rules to follow. Automation can seem like AI as it can run its task without much input, aside from the initial setup, but cannot do anything outside of this or develop its task to better complete it. AI, however, can develop into a more effective system by creating its own rules relating to the task.

There has also been an uptake in 'pseudo-AI' in recent years. Pseudo-AI is essentially using human employees in place of artificially intelligent systems.⁹ While this does not scale, it can be helpful for prototyping AI and building the business or service initially. In some instances, the human aspect of it is the initial training for the AI systems¹⁰, but in other cases, the AI systems are entirely human workforce based.

⁷ Kidd, "AI as a Service"

⁸ Deloitte, *Global Capital Trends 2018*.

⁹ Solon, "The rise of 'pseudo-AI'".

¹⁰ Scale, "Scale AI".

AI adoption rate in industry sectors

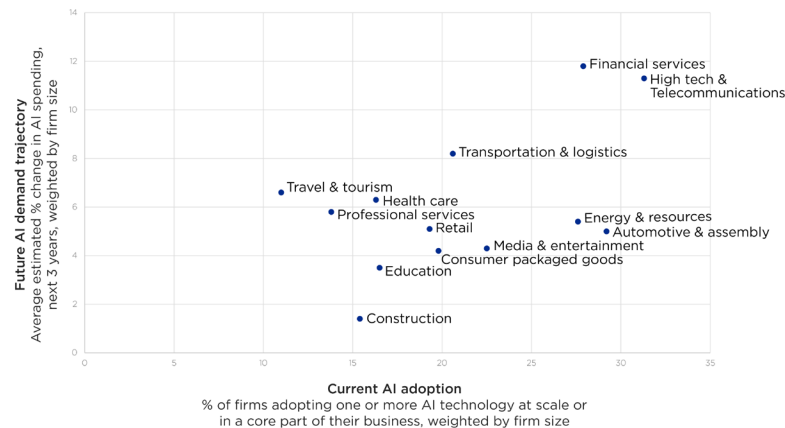


Figure 1. AI adoption rate of firms within industries, adapted from McKinsey Global Institute: AI adoption and use survey

AI will increasingly impact HR. Fast-paced work, with large variety and magnitude of data, will unavoidably lead to errors or omissions. This is especially true in HR, where employees and candidates are the sources of data. Intelligent AI systems will mitigate these risks, and increase the efficiency of HR teams.

How AI is changing recruitment

Recruitment is undergoing an artificial intelligence revolution driven by an increased focus on finding the best candidates faster, enhancing the candidate experience, and creating measurable business impact. To do this, AI systems are trained on massive data sets of candidate behaviour matched to hiring decisions, work performance and key business outcomes. This training process crystallises human intelligence into systems that support recruiter's decision-making and enables them to focus on more strategic elements of their role.

Improving the candidate experience has been a major focus of HR over the past decade with sourcing, attraction, selection, and onboarding becoming a dynamic interaction between candidates and

organisations. In fact, 73% of employers' rank candidate experience as a number one priority in the recruitment process¹¹.

Historically, assessments have been designed in a way that makes them easy for people, and then computers, to mark and score. This has generally meant that candidates are forced to answer a series of multiple-choice questions, limiting their responses to one of a few possible responses.

Artificial intelligence is turning this on its head, allowing candidates to respond in a way that is easy for them, and creating computer systems to mark and score the natural responses. This lets candidates respond through speech, video, long-form text, or the creation of work documents and presentations. AI excels at processing these unstructured natural candidate responses. This aids the decision-making capabilities of recruitment teams through rapidly processing of the rich information gathered through these media. Analysis of this data at scale would be time-prohibitive for recruitment teams; thus, AI can unlock insights previously unavailable. Allowing AI to assess the data from a candidate's response allows assessment time to be shortened.

This process enables candidates to confidently share their abilities without being forced to fit into predefined categories.

Finding the best candidates

A recent report by LinkedIn found that 70% of the global workforce is comprised of passive talent who aren't actively job searching but are open to new job opportunities¹². AI that is designed to support, rather than replace humans in the process, can help recruiters in engaging with both active and passive candidates, while identifying talent who will be high performers on the job. This enables recruiters to work and hire more effectively, reducing the time to hire significantly. AI helps recruiters to make a more informed decision on their next hire

¹¹ Bersin, "Business of Talent".

¹² LinkedIn: Talent Solutions, "Hiring Statistics."

and puts them in a more strategic position in the recruitment process. AI analysis to existing data assets (such as Talent Pools and past applications) will allow users to understand predictive outcomes.

In their recent Global Human Capital Trends Report,¹³ Deloitte found that leading companies are recognising that it is critical for AI to be used to augment human decision-making, rather than replacing it. Deloitte stressed the importance of having human oversight of AI systems, to ensure that the AI system is performing optimally. In this way, implementing AI automation can improve the scale, speed and quality of human performance, rather than replace roles.

Supporting candidates

In this new age of HR, candidates are evaluating organisations and their fit as much as organisations are evaluating candidates. Candidates can be supported through their entire journey by intelligent systems that answer questions about the role, their potential team or the benefits of working for your organisation. An enhanced candidate journey also widens the candidate pool so that recruiters can engage with a broader range of candidates, creating diversity in your potential hires.

Using intelligent systems would allow recruiters to improve the way they connect with candidates, leading to improved candidate experiences. A LinkedIn recruiter report¹⁴ found that 89% of candidates say being more connected with recruiters would help them accept a job offer faster.

Allowing candidates to share their strengths in a way that makes them feel comfortable helps create positive candidate interactions during the recruitment process. This provides candidates with a smoother experience and enables a more comfortable transition to onboarding once hired.

¹³ Deloitte, *Global Capital Trends 2018*.

¹⁴ LinkedIn: Talent Solutions, "Hiring Statistics."

Ensuring a fair process

A key benefit of AI systems is that they are data-driven meaning their performance can be audited by engineers and psychologists, to ensure that they are making decisions that are fair and free of any bias. Like all recruitment processes, it is critical AI systems are fair and free of bias. These systems must be unbiased as biases can have an impact on recruitment, mentoring and promotions. Unconscious bias can introduce unintentional discrimination and result in poor decision-making. Research has shown that a diverse workplace is more effective and performs better¹⁵, and bias can be a huge setback in creating a diverse and inclusive workplace.

There are significant risks of not monitoring or correcting for bias. When an algorithm is trained on a data set which contains bias, the algorithm will continue to act and make decisions based on these biases. A relevant example would be teaching a model with existing employees without correction, which could perpetuate existing prejudices or tendencies. This can lead to skewed decisions in recruiting and not hiring the best candidate.

Psychometric science has a long and established history of ensuring the equality and fairness of assessments through an empirical process known as adverse impact analysis. It is important to combine AI with proven psychometric science. This ensures that AI systems are transparent and auditable by professionals, making their equality visible.

The competencies of tomorrow

The skills and abilities that will be important over the next decade have been an area of intense focus for organisations, governments, and special interest groups. By knowing what future skills are needed in the workforce, we can make sure they form part of candidate assessments, enabling businesses to hire for the future. The competencies of the future combine hard and soft skills such as technical ability, complex

¹⁵ Hunt et al., *Diversity Matters*.

problem solving, and social skills. These can be difficult to measure using traditional assessments but are increasingly being measured through AI-powered assessments.

These softer skills are harder to precisely measure and challenging to do so accurately, but artificially intelligent technology can assist in monitoring and assessing them. AI can gauge responses through methods such as video interviewing, while measuring key competencies and interpersonal skills from their responses. By incorporating AI systems, HR can use their time more efficiently and to greater effect.

The importance of soft competencies

When considering skills and competencies necessary for the future workforce, it is essential to consider how humans can augment computing capability, as well as how artificially intelligent systems can augment human capabilities. Algorithms and artificially intelligent systems are far more effective at data analysis than people are, and therefore different skills will be necessary in a world with greater automation. With the rise of artificially intelligent systems and automation, the type of work that will be required is likely to be high-touch, very personalised and strategic.¹⁶ Interpersonal skills are more important than ever, and organisations cannot succeed without employees having these skills. It is essential for HR to develop employees, recruit for the relevant skills and competencies, and deliver organisational change initiatives.

Emotional intelligence and people analytics are required when interacting with people to complete a project. With many companies just monitoring the end result, not the interaction needed to get there, there is a need to focus on how key interpersonal skill capabilities contribute to success¹⁷. Industries with a strong requirement for technical skills can no longer get away with a lack of soft skills.

The ability to have some compassion and collaboration in the deck to complement critical thinking and analysis is key. Mike Lombardo

¹⁶ Eubanks, *Artificial Intelligence for HR*.

¹⁷ Eubanks, *Artificial Intelligence for HR*.

and Rob Eichinger identified core interpersonal competencies that correlated with performance across leadership roles in their Career Flow Research that included conflict management, creativity, motivating others and peer relationships. The factors that have a significant correlation with either being terminated or not being promoted included defensiveness, insensitivity to others and political missteps.¹⁸

All of us have these capabilities to a varying degree. Furthermore, everyone has the capacity to grow and develop specific areas. As the uptake of automation and AI systems in the workplace increases, the roles humans will be required to fill are changing. Rather than focusing on the analytical and data processing side of jobs, people will be required to use, and develop, interpersonal soft skills. Regardless of whether someone holds a role as a senior executive or a line manager, these soft skills are continuing to rise in importance.

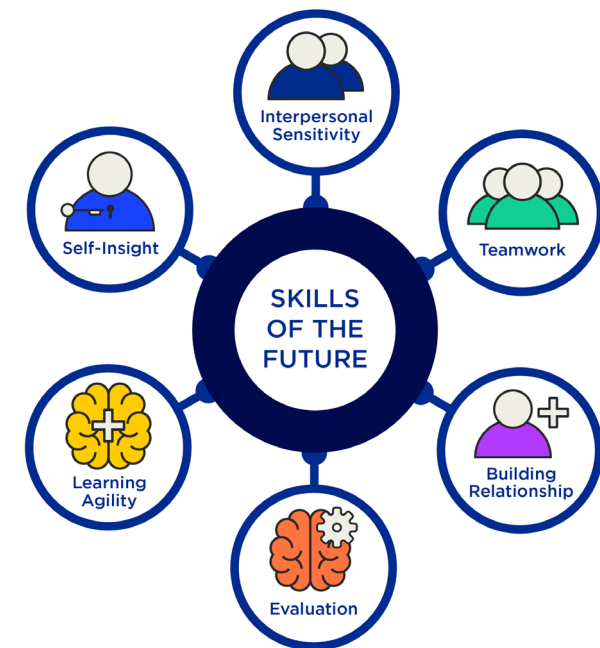


Figure 2. Skills of the future

¹⁸ Lombardo and Eichinger, *FYI: For Your Improvement*.

Competencies to focus on are Interpersonal Sensitivity, Teamwork, Building Relationships, Critical Thinking, Self-Insight and Learning Agility.

Interpersonal Sensitivity:

Is sensitive to the needs and emotions of others. Practices perceptive listening; understands non-verbal cues and responds in a calm and empathetic way.

Teamwork:

Supports and collaborates with team members to achieve targets. Appreciates the benefits of diversity, works well with a variety of people, and follows through on team commitments.

Building Relationships:

Warm, confident and approachable. Usually creates a good first impression and puts others at ease. Gets on well with people at all levels, builds rapport both inside and outside the organisation.

Critical Thinking/Evaluation:

Critically analyses even complex information in a logical way. Breaks problems down into smaller components to identify and separate underlying causes. Considers data and theories in decision-making.

Learning Agility:

Picks up new information and concepts quickly, and effectively applies this to solve new problems. Is motivated to understand the theory, analyse data, and uses feedback to expand their skillset.

Self-insight:

Is insightful and recognises own strengths and weaknesses. Thrives on new opportunities for learning and growth and is very responsive to feedback.

The world of work has undergone massive changes over the past decade, and the rate of change is increasing as more businesses utilise new technologies and ways of working. Several reports from governments and focus groups found that over the next decade the following skills will be increasingly important for work:

1. Data analysis, interpretation, visualisation, and communication
2. Verbal and written communication and collaboration
3. Complex problem solving
4. Judgment and decision making
5. Growth mindset and life-long self-directed learning
6. Business acumen and negotiation

A recent Global Trends report by Deloitte¹⁹, which surveyed more than 11,000 HR professionals, found that as technology becomes more central to our work, organisations are increasing their focus on hiring for essential skills like complex problem solving (63%), cognitive ability (55%), and social skills (52%). Hence it is crucial to assess these high demand skills in future talent.

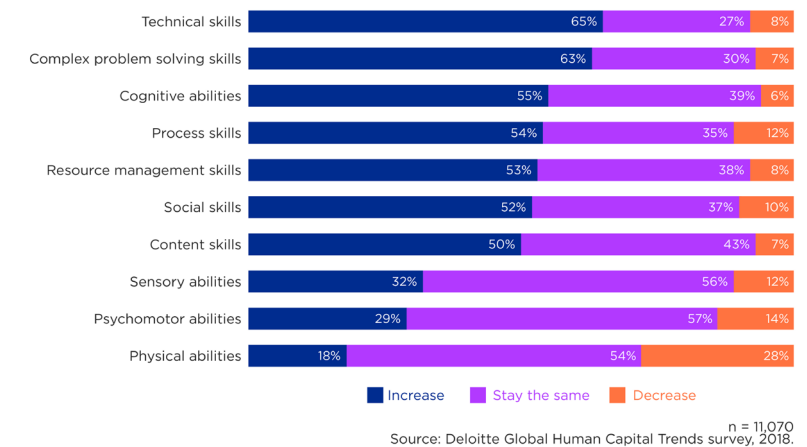


Figure 3. Expected emphasis on workforce skills as AI/robotics are integrated in the enterprise.

A recent Deloitte study reinforces this model where data they gathered over three years from 10,000+ HR professionals that although technology was more available than ever, there was nevertheless a

¹⁹ Deloitte, *Global Capital Trends*.

significant focus on interpersonal skills, confidence and motivation, critical thinking, and applied innovation and creativity.²⁰

Increasingly, AI systems are being used to allow candidates responses that are more closely related to work tasks. This means that candidates will be presented with assessments that closely simulate on-the-job tasks, allowing them to respond in a way that aligns with relevant work tasks such as designing and delivering presentations, engaging in short conference calls, or drafting work documents.

Hiring Intelligence with Video AI

Traditionally recruiting has had a trade-off between quality of detail and speed. In order to make better hiring decisions recruiters needed to increase the number of assessments for candidates to do, as well as having different interviewers in multiple interviews. With the increase in artificial technology recruiters can process candidates efficiently and gather more accurate data on which to base their decisions.

While assessing job-relevant behaviours is frequently done through assessment centres and personality tests, it can also be done through video interviewing and AI technology. 60% of recruiters²¹ are using video interviewing, as it offers graduates the opportunity to express themselves while measuring their communication skills and ability to think on their feet. A video interview reduces the staff-time and cost required for setting up conventional phone or in-person interviews, while still allowing you to personalise your questions and time parameters. It ensures consistency across interviews, enabling you to make repeatable, objective hiring decisions.

Video AI utilises the benefits of video interviewing with AI technology to review candidate responses and assess person-job fit. By training the AI algorithm to evaluate and measure candidate video interviews, recruiters can screen candidates efficiently while facilitating self-expression during the interview process.

²⁰ Deloitte, 2018 *Deloitte Millennial Survey*.

²¹ Westfall, "Video Interviewing Software".

Artificial intelligence systems are effective in searching for a more diverse candidate pool, along with supporting candidates during the hiring process. AI also gauges candidate responses, giving candidates a way to naturally demonstrate their abilities, while measuring the competencies of the future in their responses. By incorporating AI, recruiters can use their time in the hiring process strategically and more efficiently.

By implementing artificial intelligence systems into the HR function, recruiters are able to make more informed decisions throughout the hiring process. AI enables recruiters to better support and improve the candidate experience, allowing for better exchanges between prospective talent and recruiters. It reduces bias and creates predictive analytics to provide more insight into the organisation and its candidates. By getting the predictive information you need at the beginning of the hiring process, you can greatly decrease time to hire without sacrificing quality. Talegent leverages AI to evaluate recorded video interviews with validity, consistency, and objectivity. AI-driven predictions provide valuable decision support to human recruiters and hiring managers.

AI is the future of business intelligence and enables business analytics to be used by those without in-depth technical knowledge about data. AI is increasingly being used in the predictive analytics space, providing clients with more impactful and meaningful reporting. For data that is collected from an organisation, AI is able to identify any trends, and enable future actions to be taken based on these. Predictive analytics provides organisations with the ability to identify employees who are likely to be high performing leaders, or achieve targets, while being less likely to resign. Artificial intelligence provides predictions, and human intelligence provides context and strategy. Together, they make great hiring decisions.

Key Points

- Artificial intelligence lets candidates respond in a variety of unstructured, natural ways.
- AI supports recruiter's decision-making and enables them to focus on more strategic elements of their role.
- A key benefit of AI systems is that they are data driven meaning their performance can be audited by engineers and psychologists, to ensure that they are making decisions that are fair and free of any bias.
- Five key areas of skills to develop are: Interpersonal Sensitivity, Teamwork, Building Relationships, Critical Thinking, Self-Insight and Learning Agility.

CHAPTER TWELVE: REFERENCES

- Bersin, Josh. 2016. "Business of Talent."
- Deloitte . 2018. *2018 Deloitte Millennial Survey* . Survey Report, Deloitte .
- Deloitte. 2018. "2018 Global Capital Trends." Accessed 06 10, 2019. <https://www2.deloitte.com/insights/us/en/focus/human-capital-trends/2018/ai-robotics-intelligent-machines.html..html>
- Eubanks, Ben. 2018. *Artificial Intelligence for HR: Use AI to Support and Develop a Successful Workforce*. Kogan Page Publishers.
- Hunt, Vivian, Dennis Layton, and Sara Prince. 2014. *Diversity Matters*. Research Report, McKinsey & Company.
- IDC. 2019. *Data Growth, Business Opportunities, and the IT Imperatives*. 06 10. <https://www.emc.com/leadership/digital-universe/2014view/executive-summary.htm>
- Kidd, Chrissy. 2018. *AI as a Service? AlaaS Explained*. 04 25. Accessed 08 02, 2019. <https://www.bmc.com/blogs/ai-as-a-service-aiaas/>
- LeCun, Yann, Yoshua Bengio, and Geoffrey Hinton. 2015. "Deep Learning." *Nature: International Journal of Science*, 521 436-444.
- LinkedIn: Talent Solutions. 2019. "Hiring Statistics." *LinkedIn Business*. 06 10. https://business.linkedin.com/content/dam/business/talent-solutions/global/en_us/c/pdfs/Ultimate-List-of-Hiring-Stats-v02.04.pdf
- Lombardo, Micheal, and Robert Eichinger. 2006. *FYI: For Your Improvement, A Guide for Development and Coaching*. Lominger Ltd Inc.
- Marr, Bernard. 2018. *How Much Data Do We Create Every Day? The Mind-Blowing Stats Everyone Should Read*. 04 21. Accessed 06 10, 2019. <https://www.forbes.com/sites/bernardmarr/2018/05/21/how-much-data-do-we-create-every-day-the-mind-blowing-stats-everyone-should-read/#6d9ad4df6oba>
- Reinsel, David, John Gantz, and John Rydning. 2018. *Data Age 2025 Whitepaper*. Whitepaper, IDC.
- Scale. 2019. *Scale AI*. Accessed 8 2, 2019. <https://www.scaleapi.com/>
- Solon, Olivia. 2018. *The Rise of 'Pseudo-AI': How Tech Firms Quietly Use Humans to do Bots' Work*. 6 6. Accessed 08 1, 2019. <https://www.theguardian.com/technology/2018/jul/06/artificial-intelligence-ai-humans-bots-tech-companies>
- Stone, Peter, R. Brooks, E. Brynjolfsson, R. Calo, O. Etzioni, G. Hager, J. Hirschberg, et al. 2016. *One Hundred Year Study on Artificial Intelligence: Artificial Intelligence and Life in 2030*. Report of the 2015-2016 Study Panel, Stanford, CA: Stanford University.
- Westfall, Brian. 2015. *Video Interviewing Software*. 1 8. Accessed 06 18, 2019. <https://www.softwareadvice.com/hr/industryview/video-interview-report-2015/>