



AI for Good: A Better, More Inclusive Future of Work

AI's Value to People

Artificial intelligence has been publicized for decades - why should we believe the hype today? How can we know if AI negatively or positively affects enterprises, employees, and candidates? Jolen Anderson, Global Head of Human Resources at BNY Mellon, says that "sometimes organizations decide not to leverage AI rather than investigate and determine if AI can be used for a purpose that drives positive outcomes" This paper talks about what those "positive outcomes" are: why now is the right time for AI in the talent field.

In this Paper

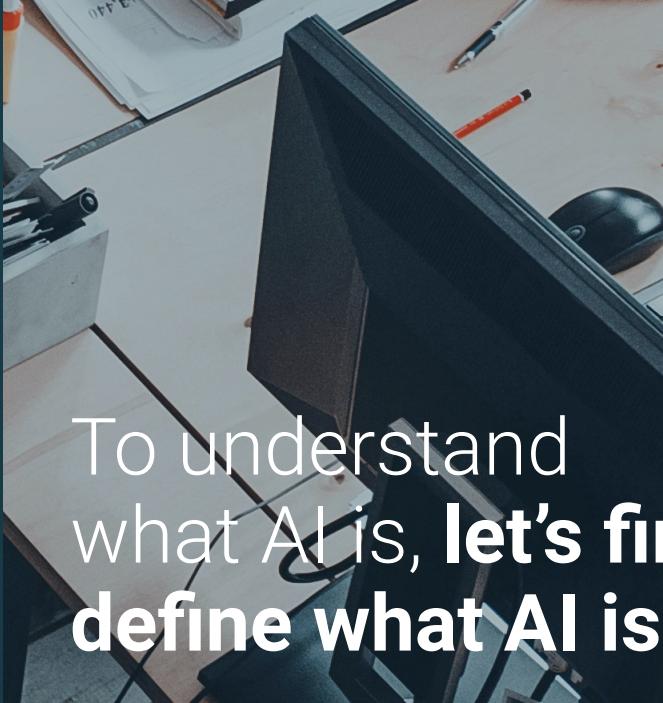
Why *now* is the right time for AI in managing talent

What AI can “see” that humans cannot

How AI actually makes the candidate experience more... human

How to manage bias with AI

How AI enables agile talent; minimizing layoffs; changing contingent workforce management; and managing non-traditional placement such as for military veterans



“We’re entering a new world in which data may be more important than software.”

*Tim O'Reilly, founder
O'Reilly Media*

To understand what AI is, let's first define what AI is not.

As with most good buzzwords, “AI” suffers from being misused. Companies often incorrectly claim they use AI when they simply use keyword matching and Boolean logic. Or, they may use pre-built decision trees and present them as AI. Such technologies may appear “intelligent” in that they can provide the information a human is looking for, but they lack the sensitivity, scale, and adaptability of true artificial intelligence.

The more advanced the AI, the more that it can do. The most advanced class of artificial intelligence is called neural networks or deep learning.

One of the primary challenges of powering deep-learning AI is the massive amount of data required. In the talent field, this requirement is billions of data points about people, career trajectories, skills, and experiences. With this data, AI engineers must then develop deep learning algorithms that use the data to determine the best answers to a defined class of questions. In the case of talent AI, such questions might include: Who is the best fit for this specific job requirement? Or, what job is this individual most likely to hold next in their career?

By their nature, such deep learning algorithms can only organize and rank information and present it to a human. Algorithms can’t predict the future, or give answers that a human would agree with 100% of the time. Yet such approaches are still extraordinarily valuable, and can transform how we live our lives and do our jobs. If you’ve ever used a modern search engine and been amazed by the results, or if you’ve ever used a social network and become engrossed in the content, you have experienced the power of deep learning AI.

Past Challenges with Workforce Data

Just as data about potential customers helps companies make advertising decisions, and information about the economy helps banks make investment decisions, so in the talent space, information about people helps enterprises make decisions about who to attract, hire, upskill, retain, rehire, and so on.

Many companies have tried to claim the mantle of AI. Using only their own historical, limited pool of data resulted in a biased output. In order to ensure that bias is filtered out, it is necessary to analyze billions of data points across geographies, industries, and companies. For example, analyzing “successful” profiles in one company’s workforce as a model for future hires could result in bias that reflect historical biases, favoring limited demographic groups. Deep learning AI with equal opportunity algorithms can filter out any such bias.

In current hiring processes, we are heavily reliant on resumes, which haven't materially changed since Leonardo Da Vinci wrote his in 1482. One key reason resumes are so error-prone is that humans are inherently bad at self-assessments. As candidates "tailor" their resumes to "match" job descriptions, self-assessed resume contents are full of platitudes, exaggerations, and oftentimes omissions (people's best work and attributes are sometimes not even included) as candidates distill years of work down to a few bullet points. The lack of descriptive, meaningful data often results in shallow substitutes as employers are negatively influenced by details that frequently have little predictive insight into a candidate's potential to excel in the job: typos, font choice, and resume layout influence the employer's perception of the candidate's capabilities.

Also, workforce data has historically been reactive and not proactive. Companies struggle to determine how many total employees, permanent and contingent, they have, let alone the skills, capabilities, and potential of their workforce. It's an even bigger struggle to determine such things as: Where shall we set up our next location, based on the availability, cost, and competition for talent? Or, for the businesses we anticipate being in two years from now, what capabilities do we need, and how does our need compare to the capabilities we have now?

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Compounding the data gap challenge, job seekers and employees update information about themselves infrequently. A person at a job for several years may not be keeping an updated resume; if they are, it may capture only a fraction of what they have done, are doing, and are capable of doing.

There has also historically been little to no use of "adjacent skills." It is impossible for a human to know about and understand the more than a million skills that exist, let alone understand skill adjacencies and correlations. These are skills that offer indicators of success in a different skill; a person good at A often excels at B.

The term "skills adjacency" is complex, and can refer to an inference of (unstated) skills or the potential to learn a skill. We can infer that someone who excels in calculus likely also excels at algebra, but the reverse is not necessarily true. We can guess that an experienced enterprise sales representative could quickly learn enterprise partnerships. And with nearly 2 million unique skills

globally, it is impossible for a human to understand all of them, let alone the correlations between them, and the trends of new and emerging skills. Recruiters today are being asked not only to do that, but then also map that against the needs of a job requisition. By unlocking "skills adjacency," artificial intelligence unlocks a massively untapped source of context and information to complete the understanding of a human's true potential. "This causality analysis could be a way of opening non-traditional pathways for candidates who don't have the experience doing the exact job needed but have every ounce of capability required," says Anderson, of BNY Mellon.

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AI can also help with transferable skills. This is particularly valuable when there are significant numbers of layoffs in some industries, while other industries are expanding simultaneously. Imagine a restaurant manager out of work, thinking that all they know is food and restaurants. In reality, they likely know payroll, team building, inventory, budgeting, customer service, and more, all of which can be applied to another industry. AI can be used

to help people break down their experience into capabilities, and match those with jobs needing to be filled now. For example, we have seen a long-time restaurant worker recently find work in a call center. A major bank tells us one of its most unique sources of bank employees is bartenders.

Lastly, data has been time-limited. Companies are unaware of the skills their alumni have gained since departing, skills that could greatly enhance re-employment prospects. Similarly, past applicants to a company could years later make great hires, but companies have no visibility into how their skills and capabilities have improved in the intervening years. Instead, recruiters resort to "conventional wisdom" that any past rejected candidate or former employee can never be a future hire.

We Have More Data Than Ever

Historically, the reach of AI was limited by computing power, access to data, and volume of data. But that's no longer the case due to advances in deep learning and big data. We can now analyze huge volumes of data with the most advanced neural networks. These neural nets identify more than one million skills across the world's 7.8 billion people, using this information to power recruiting and workforce management decisions.

"When done right, AI safely makes data more complete and transparent," says Dr. Huggy Rao, the Atholl McBean professor of organizational behavior and human resources at the *Stanford Graduate School of Business*.

Under the status quo, job seekers often find themselves wondering what jobs they are strong candidates for – should they apply for an Associate or a Senior Associate role? This self-assessment leads to bias, often along the lines of gender bias (see p. 5 sidebar on career websites and diversity). With AI, candidates can more transparently understand what skills and capabilities they possess in order to be a potential applicant for the role – visually demonstrating how their capabilities match up to the needs of the job.

Humans are simply not capable of understanding massive volumes of data. We have historically supplemented an extremely narrow view of data with our own perceptions and limited understanding of the underlying skills required to successfully perform in jobs. For example, when a company is hiring for a customer service manager, the recruiter will search for candidates who formerly had that exact title, or titles that they believe to be similar. Recruiters have not had the tools to surface candidates who may have the right customer-skills based on their work experiences: a customer service representative at a department store may have a skill set more similar to a real estate agent than a customer service representative at a bank. A middle school teacher may have more of the skills required to be a fantastic product trainer at a technology company than a product operations associate already in the tech industry. This is where using true AI, based on deep learning, can fill in the gaps.

If a company is looking for project-management skills, it is likely to find that resumes and job descriptions alone fail to surface the right matches. AI can see that a job candidate or current employee's skills are "validated" or "likely" based on their experience – even though the candidate or employee has not had a title called "project manager" or listed project management on their resume. Or, similarly and equally valuable, AI can see that a candidate for a project-management job is missing the required skills despite holding prior project management titles.

AI can see potential. If a prospective employee knows one programming language, for example, the technology has analyzed the careers of so many people that it knows that a person who knows language A is likely to be able to pick up language B.

This potential is highly important to employers, according to Dr. Rao. He describes a recent conversation with a "very successful" Stanford graduate, who rose quickly in the world of finance. "The graduate told me that they owe most of their jobs not to hard skills but to trust...[while] they couldn't do the job based on the skills they had on Day 1, employers trusted that they could learn to do the job."

AI Scales People

Michael Ross, Visa's former CHRO, says "companies want to know that decisions are being made with the best, most relevant data possible. And candidates want to know they are being represented for their skills, capabilities, experiences and potential."

Indeed, AI can augment the careers of job seekers, helping people secure the right job and career for them. And it provides the intelligence for an employer to hire or promote the right person for the right job, leapfrogging outdated tools. It also provides a deeper, fairer type of workforce management. Instead of relying on outdated technologies, outdated interviews, and a lack of data as to who would be best for a job, AI allows talent leaders to make much more intelligent employment-related decisions. It can also reduce the unconscious bias that has been a regular feature of the status quo.

The Candidate Experience

There has been a tremendous amount of talk the last decade or so about the “candidate experience.” This has centered around things like improving corporate career websites, giving feedback to job candidates not hired, and speeding up the hiring process. The appearance of some career sites has improved. But application rates remain low. This is an area where AI can make a marked improvement.

What is happening at these career sites is a drop-off at the time candidates search for a job. The prospects often cannot find a job that matches their skills, don’t feel they will be selected for an interview, or don’t even know precisely where on the site to search. As an example, some career sites ask candidates to choose a department within the company to begin a search. Many times, the candidate doesn’t know which to choose because companies are using different words to describe the same function.

Poor career websites, particularly the dropoff between viewing a career site and applying, are a diversity issue. A well-publicized study at Hewlett-Packard, written up in *Harvard Business Review* and elsewhere, found that women are more likely than men to opt out of applying for a job if they don’t meet all the qualifications.

This is where artificial intelligence comes in. Companies can have job candidates upload a resume, CV, or bio to their websites. The AI technology can be used to compare the skills of a job prospect with the skills in each of the company’s roles. This shows the candidate that they are indeed a fit, and has boosted application rates dramatically among companies adopting it, such as with a leading discount airline that increased qualified applications four times, providing a foundation for greater diversity hiring.

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One major discount airline used AI in a new career site, asking candidates to upload a resume to be matched to open jobs.

It found that 89% of those who upload a resume **apply for a position, four times the industry average.**



The Element of Time

Artificial intelligence can delve deeply into the particulars of a person's experience in a way that no human could, at scale. For example, after people left sales roles at a certain company, what did they do next? They can help inform us of possible next-moves of a future salesperson at that company.

AI can even capture the dimension of time. A human recruiter, seeing General Electric on a candidate's resume, may think "GE is a good company to have worked for" without any further understanding. AI can know that a job in a certain team or department of GE during a certain time period was different than one on a different team or at a different time, offering a much more nuanced and valuable assessment of the candidate.

Dr. Rao says this time element is not examined enough: "Everyone is going to succeed. And everyone, at some point, is going to fail. But how do you respond? You did a certain thing when the economy was great—how can we know if that was you, or the tailwinds of the macroeconomic forces? How can you normalize this data to understand what great performance looks like in a sour economy?"

Expanding on the above point, AI can provide a completeness to data currently lacking for so many companies in their workforce-management practices. Without AI, a hospital chain is almost automatically going to find that a doctor with great patient outcomes is better than one with so-so outcomes. But patient outcomes are an extremely limited measure if taken out of context. What if the first doctor works in a far more affluent area with far healthier patients?

Similarly, a high-school teacher with students who go to college 90 percent of the time isn't necessarily better than one whose students attend college 50 percent of the time; college attendance as a measure of teacher quality is dependent on the area they teach in, something AI can account for.

Let's examine the "time limits" of data discussed earlier—the limited visibility to the subsequent careers of ex-employees and past applicants. AI provides this visibility. AI examining large amounts of data can make the profiles of essentially every person dynamic. Take the example of an employee, job candidate—anyone—who does not regularly update their resume. They are nonetheless accumulating a trail of skills and experience: interview notes, performance reviews, social media footprints, online videos, and so on. AI can automatically enhance everyone's profile by finding further details about a person and applying them to the profile, providing the knowledge that companies currently do not have as to the accomplishments of former candidates, former employees, and others.

It is important to note here that humans have, and will continue to have, a critical role in the hiring process. Employers must be able to understand the AI with transparency, and then modify the requirements for a role to avoid bias and take into account real-world life circumstances. For example, some companies may decide that a role needs to evolve to include new, critical skill sets. Additionally, some people need "career breaks" for reasons unrelated to their professional lives, such as to take care of an elderly parent or a young child. Employers must be able to calibrate their requirements to help AI identify the most appropriate candidates for a job, and to make sure these kinds of revisions are an accurate reflection of their needs.

Other Use Cases for AI in the Talent Space

We have examined some of the ways AI can overcome past flaws in workforce management, and given examples such as corporate career websites. Let's look at some other talent functions that take place in organizations today, and how AI can impact them.

Internal mobility: At most organizations, "internal mobility" has been limited to occasionally posting jobs internally before sourcing from the outside. Most of the time, employees find new challenges externally, not internally. It is often unclear in an organization of tens or even hundreds of thousands of employees how an employee might move internally. This is particularly true when the potential match is less evident or crosses organizational lines. Artificial intelligence can help employees break down their experience into capabilities, and see what internal roles are available that match the need for those capabilities or what they can learn to pursue an aspirational role. An employee can even see what capabilities are needed for a role they aspire to, and pursue coursework if needed to prepare them for that internal role.

HR professionals and managers, too, can improve internal mobility through AI. Rather than waiting for the exit interview to determine why a person quit, they can reach out to people about internal roles where their capabilities fit. They can build succession plans showing which people have the potential to move up, using the AI that has measured the career trajectories of millions of people.

Avoiding layoffs: Companies have laid off by the hundreds and hired by the hundreds almost simultaneously, as business needs have changed. With the use of artificial intelligence, companies can save jobs by placing employees who otherwise would have been let go in internal positions where their capabilities are a fit.

The unique ability of AI to match people with opportunities at scale is especially important for avoiding layoffs.

Contingent work: Millions of dollars are spent by companies on gig, contract, temporary, seasonal, and other contingent workers without treating the expense as a longer-term investment, as they would for full-time employees.

Take the example of a large, far-flung company looking for someone who speaks Portuguese to build a website. Someone in that large company's workforce may have the language skills needed. But the company may be unaware of who that is, or how they could access that skill for the required project. With artificial intelligence, the capabilities and experience of a company's workforce could far more easily be captured. Employees could be deployed on projects, making them more valuable to their employers and in turn providing them a greater sense of job security and growth opportunity.

One major bank, amidst a mass layoff, launched an AI-driven career site for its employees to search for jobs internally.

Its internal talent redeployment rose from 19% to 58%.

Non-traditional placement: AI can help tremendously in taking those whose capabilities have been difficult to translate, and finding them matching work. An infantry sergeant could have experience boosting morale and working with teams, as well as influencing and listening. This person could be a great salesperson whose capabilities are not being captured by military titles or even skills translators.

Phil Dana is the head of human resources at Dendreon, a biotechnology company, and a Naval Academy graduate. He is a long-time supporter of veterans, and gives a different example from the military: "I have always strongly championed more veterans to go into HR, which is a field that would capitalize on their experiences with leadership and talent," Dana says. "But a civilian version of HR doesn't translate. If you look at most of the senior HR leaders who are veterans, hardly any of them were 'HR' in the military." Dana says he'd love to see AI uncover 'transitioning members' true strengths and pair them with career paths and opportunities that they would not have thought about."

Analyzing skill gaps: As the pace of business increases, companies are finding themselves with critical workforce skill gaps that will hamper future growth, or worse yet, a lack of clarity in what their skill gaps are and how acute the shortage is. Deep learning AI is uniquely positioned to help correct this lack of knowledge.

Companies can deploy deep learning AI to gain a holistic view of the capabilities present within their current workforce, and compare their workforce capabilities against peer companies.

Take for example a large foods company, historically in the business of snacks and packaged foods. Many such companies are attempting to move into more nutritious and fresh foods, including more plant-based foods. AI can give a company visibility into what capabilities are needed to prepare for this reality, what gaps exist in its current workforce, and how its capabilities compare to the capabilities of its competitors.

Scaling People and Better Careers

AI can truly scale not just companies, but also people. It can help people reach their potential and provide them with the careers they deserve. As Jolen Anderson of BNY Mellon described above, artificial intelligence has the potential of being discarded due to misunderstanding of what it is, and how it can be deployed. It is our hope that this paper has increased understanding of AI and in turn helped readers see its tremendous potential for promoting job matching, internal mobility, career growth, and retention.

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Eightfold.ai® delivers the Talent Intelligence Platform™, the most effective way for companies to retain top performers, upskill and reskill the workforce, recruit top talent efficiently, and reach diversity goals. Eightfold's deep learning artificial intelligence platform empowers enterprises to turn talent management into a competitive advantage. Eightfold is based in Mountain View, California.