AI:

HOW AI IS IMPACTING THE RECRUITMENT PROCESS

skeeled

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Introduction

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The scarcity of skilled candidates across many industries has created the need to find, attract and hire the best talent faster. In fact, talent shortages are considered as the factor having the biggest impact on HR over the next few years. We have been hearing people talk about the war for talent for a while now and many studies show that millennials, and mostly now the Gen Zs, can be much harder to recruit. These are the most well-educated and digitally skilled candidates ever.

Thus, with new technology popping up every minute, companies cannot afford to keep running manual recruitment processes at the cost of their own businesses success. Hiring the right person for a role at your company is as important as not hiring the wrong person. In such a competitive job market, it's of the utmost importance to have a cost-effective recruitment model which allows you to secure the best talent for your organisation.

Recruitment activities are traditionally overwhelming for recruiters who need to carry many tasks and manage many processes at once. Hence, artificial intelligence (AI) is quickly becoming essential for searching, screening and hiring the right candidate. With AI and automation, companies can collect, sort, and analyse high-volume candidate information. Moreover, adopting such

innovations definitely impacts and transforms a company's employer brand, strengthening its ability to attract the most talented candidates.

Regarding AI taking over the recruiter's job, it will certainly take over the more administrative, manual tasks which will make some of the recruiter's functions disappear. Nonetheless, it will also lead to new, added-value roles in recruitment where the human touch is key.

We believe that we are only scratching the surface of the endless possibilities of the application of AI in the recruitment domain and we're most definitely excited about what's to come. With this guide, we hope to shed some light on how AI is already impacting the recruitment industry.

And to those who are still attached to the idea that machines cannot take part in Human Resources activities, such as recruitment, we hope to show with this ebook how automated decision-making can not only bring efficiency and fairness to the recruitment process but also enhance the candidate experience.

Learnings From Our Journey to AI

· Artur Teixeira
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As any company nowadays knows, artificial intelligence (AI) is a tool you need to leverage if you want to move your business into the future. In 2014, skeeled was already way ahead of the game, which might sound good, to get a head start on such a complex topic, and it is, but it doesn't come without its setbacks as well.

AI has been called the future of technology for decades now, but that future is yet to come. Although the advancements made in the past years have been exponential, the human mind needs time to adjust to this reality as well.

A mere 200 years ago the industrial revolution was coming to an end and now we are on the brink of a new revolution, which might displace many individuals from the biggest human capital heavy industries in the world (e.g. drivers and factory workers). As such, it is important to understand that coming too early to market is as much of an issue as coming too late.

I came back to this 2014 HBR article[1] many times over the years, where it is stated and I quote

> "Our analysis[2] of 17 studies of applicant evaluations shows that a simple equation outperforms human decisions by at least 25%."

If you think 6 years back, to 2014, to be a truly AI-powered company was a title only big players such as IBM, Facebook and Google could claim. At the same time, skeeled was already dreaming of automated matching and ranking, based on human-defined criteria, which a trained AI tool could learn and manage on its own.

But this was just the start. After the groundwork has been laid, skeeled could move on to more exciting tools, such as a talent pool, taking the real power of data and the speed of an automated matching to provide real-time suggestions to recruiters, saving them hours of grunt work with one click.

1 · https://hbr.org/2014/05/in-hiring-algorithms-beat-instinct
2 · http://psycnet.apa.org/journals/apl/98/6/1060/

Learnings From Our Journey to AI

Even small developments using natural language processing (NLP) can save time. The time a recruiter would spend sifting through hundreds of occupations and education standards, such as ONET, ESCO and ISCED, to find the ones that are best adjusted to the profile they are looking for, can now be automated and trained in the context of our wider knowledge base, to be done alone.

Yet, after all this, the AI revolution is in its baby steps, as I believe, and one of the trends we see today will propel AI to the next level. I am speaking of Transparent and Responsible AI.

However, the adoption of AI in recruitment still faces some resistance from those who don’t understand how it really works. The first setback I've encountered was in a meeting with individuals that are simply afraid of AI. It is hard for me as a tech guy to explain, in an "elevator pitch" kind of speech, why there's no need to be afraid, and that AI can only save you the mindless work, letting you focus on more human tasks. Ideally, it wouldn't be a matter of trust. AI can be leveraged in a way that will show you its thought process.

And that is where AI is going to win the hearts and brains of people. No one trusts robots, and soon, there will be no need to, given that many companies like skeeled are developing ways of providing you feedback on the automated decisions taken by AI, in order to promote its transparent and responsible use.

We do understand the importance of unbiased and unprejudiced decision-making, and we simply don't feed our algorithm with race, gender, age, religion or any data that isn't objectively necessary for the assessment of a person's skills, soft or hard.

The second major setback I have had to deal with came from an experience I had not long ago, where a mostly non-technical person asked me if we used neural networks (NN), and the answer is no, we don't currently do. The reaction was instant and bold: "Then it's not AI."

I also do understand the eagerness of achieving fully automated AI, sometimes described as level 5 or general AI, and building a machine able to pass Turing's test, making it indistinguishable from a human. But I have to disagree with such an assertive comment though.

Learnings From Our Journey to AI

AI has many components, such as machine learning, NLP and vision. Some lean on others to achieve a common goal, as for example NLP can be supported by optical character recognition (vision) to develop a truly remarkable real-time translation system (e.g. Google Lens' Real-Time Translation).

As for the future of AI, or the general direction this technology is going, I think it is having a similar path to what computer use had in every industry. Most jobs 50 years ago didn't require knowledge of how to use a computer, and now, most do. From office workers, mechanics, construction, medicine, everyone is using a computer nowadays. AI is already infiltrating into all these areas, with smaller or bigger impact. In the future, there won't exist a distinction between software using AI or not using AI, as it will be just another tool in the engineers' belt to improve the performance and accuracy of the software.

The future of AI lies in using every known technique collectively, and making them interact with each other in a way that makes it seamless and at the same time transparent. It is not an easy task, but so much has been achieved in the 200 years since the industrial revolution, that maybe in 200 more we will get there.

"The future of AI lies in using every known technique collectively, and making them interact with each other in a way that makes it seamless and at the same time transparent."

What is AI?

The common definition of artificial intelligence (AI) refers to machines that are able to think and act like humans. According to the the English Oxford Living Dictionary[3], AI is "the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages."

Despite being a hot topic of today's world, the first research on AI goes back to the 1950s. At the time the concept of AI was created by the first generation of researchers who believed that it would confer human intelligence to machines. According to their predictions, in just a few decades machines would be able to walk, dance, speak and listen, make autonomous decisions, learn and have emotions, all that in an autonomous way.

However, almost 70 years later, we're not there yet due to a number of constraints such as current computational power and energy consumption of machines. Notwithstanding, many people who don't quite understand how AI works strongly believe it will soon become a threat to humans. Yet we are ac-

3 · https://www.lexico.com/definition/artificial_intelligence


AI

tually far from the robot takeover pictured in the Terminator saga, which has been part of our collective imaginary since the 90s.

These days, what we are dealing with is what is called Narrow AI, where different branches of AI work to assign specific intelligent behaviours to machines. Narrow AI encompasses artificial intelligence systems that are specified to handle a singular or limited task, while General AI, which can also be referred to as Strong AI, is about machines being at least as intelligent as humans.

So, presently, we are leveraging robotics and automation technology present in production lines to another level, by adding learning capabilities which increases the efficiency of these real-time tasks.

We are using computer vision to emulate human sight in different areas, such as self-driving cars, face recognition, detection of faults in manufacturing products, and medical imagiology, to name just a few examples. In certain areas, AI is already doing better than humans, as in the detection of certain types of cancer from images[4].

4 · https://medcitynews.com/2020/01/googles-ai-beats-humans-at-detecting-breast-cancer-sometimes/

In the same vein, the use of Natural Language Processing (NLP), an interdisciplinary effort from AI, linguistics and information engineering, allows machines to read, process, understand and produce human languages to some extent. NLP is being used in a panoply of different applications such as chatbots and virtual assistants and online transaction tools. In the recruitment domain, NLP is of paramount importance in extracting the semantics contained in job descriptions and candidates' resumes, and in building occupations-related ontologies.

There are other areas of valuable research in AI. However, the one that is getting the most attention these days is machine learning. A machine learning model is trained with historical data on a given problem in order to learn this problem. For example, in the recruitment domain, we can train a machine learning model with data from past pre-screening (human) decisions and use this model to automate the pre-screening of new candidates. This is no easy work, and the degree of accuracy, correctness and fairness of automated decisions depends on the care that must be put in acquiring, selecting and mangling this historical data.

Although Narrow AI concentrates on specific AI problems, it does not mean that techniques from different AI areas could not coexist. On the contrary, AI solutions present in our daily lives use techniques from different areas. For example, self-driving cars use computer vision, NLP and machine learning.

Apple's virtual assistant Siri, one of the most famous examples of the application of Narrow AI, uses NLP and machine learning to complete various specific tasks on the mobile platform of an iPhone. And when we check our email and notice that some emails were marked as spam, we know that this was possible due to the joint use of NLP and machine learning.

If the problem at hands makes use of massive quantities of data, we enter the realm of big data, and we use deep learning, a set of machine learning models and techniques specially fitted to big data problems.

5 · https://www.forbes.com/sites/bernardmarr/2018/02/14/the-key-definitions-of-artificial-intelligence-ai-that-explain-its-importance/#2e8406ef4f5d

"Those working with AI today make it a priority to define the field for the problems it will solve and the benefits the technology can have for society. It's no longer a primary objective for most to get to AI that operates just like a human brain, but to use its unique capabilities to enhance our world."

Bernard Marr in Forbes[5]

How Does AI Work in Recruitment?

Evolving at a fast pace, AI is revolutionising every aspect of our lives more and more. As such, it has also extended its reach to Human Resources (HR) and it is playing an essential part in the streamlining and automation of the recruitment process.

In fact, AI has assumed an important role in improving both the recruiter and the candidate's experience. And it does so, mainly, by allowing recruiters to save time with repetitive tasks that can be automated, and focus on engaging more effectively with candidates.

> "Most HR professionals need to learn more about how AI can be leveraged for the purpose of improving recruitment.
> Only about 40% of HR professionals consider themselves at least moderately knowledgeable about AI."

"The 2019 State of Artificial Intelligence in Talent Acquisition"
Hr.com Research

Simply put, recruiters can rely on AI to take care of administrative assignments such as interview scheduling, resume screening and candidate matching in a more efficient manner, while they dedicate themselves to what really matters on a recruitment process: identifying and hiring the right candidate.

For instance, let's think about the pre-screening of resumes. According to Ideal, *65% of the resumes submitted to high-volume jobs are completely ignored*[6]. This means that by doing a manual screening of CVs recruiters overlook top candidates quite often. And it is perfectly understandable. Can you imagine what it is like to review and evaluate an average of 250 CVs per job opening[7]?

These repetitive and time-consuming tasks in the recruitment workflow take excessive time from recruiters, enlarge the recruitment cycle, and contribute to candidates' dismissal. Thankfully for recruiters, there are new AI tools available that automate this type of work.

6 · https://ideal.com/high-volume-recruitment/
7 · https://www.glassdoor.com/employers/topics/hiring-recruiting/

How Does AI Work in Recruitment?

But AI can bring more than automation to recruitment. In fact, AI's extraordinary ability to process massive amounts of data, together with impressive improvements happening in NLP, allows the development of new and innovative solutions.

Some examples of that are machine suggested ways to improve job descriptions to attract more and more diverse candidates, the fast and effective search for passive talents across the world, and the use of chatbots to ask for omiss candidates' information, when needed. In the same way, the increasing interdisciplinarity between AI and neurosciences raised the opportunity to research new solutions of video interviews with automated extraction of personality traits from the recorded candidate.

How AI is Impacting the Recruitment Process

Better Candidate Sourcing

Improved Job Postings

Preliminary Interviewing

Quicker Selection Process

Increased Workplace Diversity

Higher Quality of Hire

Will AI Replace the Human Recruiter?

AI is becoming one of the fastest-growing sectors of investment in the world. According to Gartner[8], AI-derived business value is projected to reach up to $3.9 trillion by 2022.

From screening CV's to scheduling interviews and managing large-volume applications, recruiters can feel overwhelmed by their workload. This often leads to delays in recruitment processes and more biased decisions. However, with the adoption of AI in recruitment, some of these tasks can be improved and streamlined. Despite the many benefits AI can bring to the table, fear and suspicion are still main blockers of its adoption.

Is AI going to take over the recruiter's job?

Even though AI can automate some of the tasks usually performed manually by recruiters, the truth is that it is meant to be used as a tool to help reduce the time spent on routine tasks, and not as a replacement for human work. Its purpose is to speed up the recruitment process and save recruiters time that can be used in more important tasks, like interviewing and engaging with candidates.

8 · https://www.gartner.com/en/newsroom/press-releases/2018-04-25-gartner-says-global-artificial-intelligence-business-value-to-reach-1-point-2-trillion-in-2018

And this is due to the fact that machines are not capable of engaging in benevolent relationships, to understand the fears and doubts of candidates, to persuade talents, to have empathy, etc, which, of course, are essential aspects in recruitment. In reality, and despite the most recent advances in NLP, neuroscience and in social and psychological computational modeling, machines are still far from replacing humans in all tasks that imply the human touch.

Rather than replacing humans, the AI community privileges the human in the loop paradigma. In fact, even with automated decision making in place the recruiter always has a final say on whether to accept or reject candidates.

On the one hand, in the recruitment domain, the recruiter will be more and more involved with the tasks that require human interaction and empathy, and spend less time with repetitive, administrative tasks. On the other hand, recruiters will have an increasingly important role in supporting data scientists with valuable insights and domain knowledge, contributing to the creation of unbiased and fair datasets.

AI-Based Recruitment Tools

According to an *Hr.com Research report*[9], HR professionals are aware of the great potential of AI-related tools, namely, those that help to manage and analyse the huge amount of CVs and related data they have at hand. Another area where these professionals recognise that AI can be of great use is in automating repetitive, low-value tasks of distributing and selecting assessments based on job openings, professions, and other related dimensions. And finally, they also pinpoint the usefulness of using predictive modeling applied to tasks such as job descriptions' enhancement, talent sourcing and company branding.

There are in fact many ways in which AI can impact and transform business outcomes. Here are some of the most promising use cases of AI in recruitment:

9 · https://www.oracle.com/a/ocom/docs/artificial-intelligence-in-talent-acquisition.pdf

Candidate Pre-screening and Matching

The manual screening of CVs is one of the most time-consuming tasks for recruiters. However, AI-based recruitment software can easily handle this initial stage of the recruiting process. This software can use a CV parser to extract the information from the candidates' resume and save it as a standardise profile adapted to further processing.

The following step is then the automated matching of candidates against the specific job's requirements to check if these candidates are suitable for the position they are applying to. This is typically done using NLP and machine learning, and results in a fast, objective and fair shortlist of candidates that helps the recruiter in deciding which candidates to reject and which ones to pass for further analysis.

Automating Candidate Matching with Machine Learning

Ideally, after a job posting, recruiters receive a lot of applications and they need to quickly check whether each applicant is a fit for the job or not. So, to tackle this problem in an automated way, what is done is to transfer the human experts' reasoning process into the machine. Therefore, a machine learning predictive model is trained with past decisions of recruiters of whether to accept or reject candidates.

This requires building a dataset with information from candidates, the jobs they applied to, and the decisions of the recruiters, i.e., accept/reject. Building this dataset is very time-consuming, because most of the time data is noisy, erroneous, or even missing, and data scientists must ensure that at the end the dataset is correct and unbiased.

In the same way, some data features need to be reengineered by making extensive use of available or proprietary knowledge bases on occupations, skills,

education and careers, to ensure that all semantics of applicants and job descriptions are correctly captured.

When this dataset is ready, a machine learning predictive model is trained using mathematics and statistics that unveil patterns between the available information and the decisions made by the human experts.

Once trained, the machine learning model is able to make decisions that are similar to the ones of the recruiters. As a plus, as machine learning algorithms improve with the input of new data, they learn to find the right candidates, acting as a filter for the flood of job applications, and making sure that top talent candidates are retained and that those who are unqualified are not accepted for further analysis.

Candidate Ranking

AI-based recruitment software can also help recruiters to identify the best talent in their pipeline faster using a ranking tool that classifies applicants into different categories (e.g., weak, average, good and great).

Although this is also a machine learning task, it uses a different dataset and predictive model that the one used in matching, as the reasoning process of recruiters in ranking is different from the one used in matching. In the same way, other sources of information are typically considered at this stage, such as the results of psychological and technical assessments or even information derived from interviews.

This allows recruiters to focus on the most promising candidates right from the start of the recruitment process. Knowing that top talent stays on the market for a very short period of time[10], it is of the utmost importance for recruiters to move quickly and engage with the most qualified candidates before they're gone.

10 · https://www.ere.net/top-candidates-are-gone-within-10-days-so-assign-each-a-hire-by-date/

Candidate Rediscovery

Every time you post a new job you put a lot of effort into attracting, assessing and interviewing the best candidates. But in the end, you only hire one person for the job. Hence, there are many good or even great candidates you've shortlisted in previous recruitment processes that didn't get the job.

A software with AI capabilities, such as skeeled, can help recruiters to automatically identify candidates that have previously applied for a job and match the requirements of a new, potentially different job. This is why we decided to develop a new feature that we call "Internal Talent Pool" that gives recruiters the unique opportunity to save time and money on new hiring processes by accessing qualified candidates faster.

Chatbots

The recruitment process is candidate-centric. As such, continuous candidate engagement is essential for an efficient recruitment. In this domain, chatbots are a very useful tool that allows recruiters to keep candidates well engaged and provide excellent candidate experience.

Chatbots use machine learning and NLP to interact with humans and answer their questions. They use predefined rules and algorithms to find relevant answers to people's queries and can be used in various communication channels such as email, SMS, social media, messaging apps and other specific software.

Moreover, chatbots are also useful to use in conjunction with the automated detection of missing information in candidates' resumes, as they can ask candidates for additional data. Lastly, chatbots are always available to interact with applicants and can provide them with useful information regarding job applications, saving recruiters time so they can focus on the selection process.

Augmented Writing

Another promising use of AI in recruitment is augmented writing, where AI is leveraged to evaluate job descriptions before they are published. For example, using such a tool allows to instantly detect ambiguities and contradictions in job descriptions and suggests improvements that can be made. This prevents candidates from getting confused about a job offering and strengthens the decisions made by the algorithms supporting the automated tools.

In the same way, the combination of machine learning and NLP can help to check if a given sentence in a job description can be enhanced in order to attract more diverse and talented candidates.

Another possibility of augmented writing would be a tool that automatically checks if some important candidate's information is missing and either alert the recruiter to this omission or connect to a chatbot that asks the information directly to the candidate.

Talent Sourcing

Reaching out to passive candidates is key to finding the right talent faster. Using an AI sourcing tool based on machine learning algorithms allows recruiters to reduce the time to fill a position by automatically identifying the most suitable potential candidates for a specific role.

Sourcing automation is typically a two-step process. First, a sourcing tool crawls the Internet searching for passive candidates with specific skill sets or specialisations, using criteria such as recent changes to the professional web pages of these individuals or the existence of news about the wealth of these individuals' companies (e.g., are they laying off?).

Then, in a second step, different AI algorithms use these criteria to infer if these candidates are open to new job opportunities and to assess these candidates' professional experience, competencies and knowledge, building a candidate pipeline of the most relevant profiles to a given need.

Given that these tools of talent sourcing are fully automated, recruiters reduce substantially the time spent on manual sourcing of candidates. As mentioned before, these are just some of the most interesting uses cases of AI in recruitment, according to our opinion. However, there are many others.

AI-Based Recruitment Tools

Candidate Pre-screening and Matching

Candidate Ranking

Candidate Rediscovery

Chatbots

Augmented Writing

Talent Sourcing

Top Benefits of AI in Recruitment

Although its adoption in HR and Recruitment is still in an early stage, it is undeniable that AI has many benefits:

1 ·
Speeding up the Hiring Process

Recruitment automation technologies leverage AI to automate tasks that are usually performed manually and very time-consuming.

Think of how a machine learning algorithm can take a large quantity of CVs and quickly screen them and identify the best candidates based on your own historical hiring decisions. In the same way, AI can be used to automate many other administrative tasks that consume most of the recruiters' time, such as interview scheduling, allowing them to focus on value-adding activities and advancing the recruitment process.

> "14 hours is the average amount of time per week lost to manually completing tasks."
>
> Ideal[11]

2 · ·
Improving the Quality of Hire

Selecting the right candidates from the talent pool is one of the most crucial steps in the recruitment process. Given that AI can keep learning which factors make someone successful or unsuccessful in a specific role, it can continuously improve the candidate matching.

By accurately identifying the most suitable candidates for a given job, the risk of candidates' turnover gets lower, which is another important benefit.

11 · https://ideal.com/how-recruiters-feel-about-ai/

3 · · ·

Removing Bias

With the help of AI and automation, candidates are screened based on their experience, education, and skills, without suffering from the subjective effect of the cognitive bias that is intrinsic to humans and, therefore, to recruiters. This will provide an equal chance for every candidate to apply for the job opening, reducing biases in recruitment.

Nevertheless, as machine learning models learn from historical data, the dataset you use to train these models can still contain biased or incorrect decisions, and the fear exists that these models' predictions will also be biased or incorrect. Luckly, this undesirable behavior can be mitigated using the right responsible AI procedures at different points of the automated process, as we are going to see in section 7, which guarantees that the final decisions are unbiased and fair.

As Frida Polli, a cognitive neuroscientist, defends in an article[12] published in the Harvard Business Review, AI can eliminate unconscious human bias. According to the neuroscientist, we can design AI to meet certain beneficial specifications, running audits and removing any bias that is found. "An AI audit should function just like the safety testing of a new car before someone drives it. If standards are not met, the defective technology must be fixed before it is allowed into production", she explains.

12 · https://hbr.org/2019/10/using-ai-to-eliminate-bias-from-hiring

4 · · · ·

Enhancing the Candidate Experience

Providing an excellent candidate experience is easier when you are using an AI-based recruitment tool. The biggest recruitment pain point commonly mentioned by job candidates is the lack of communication during the process, which is mainly due to the fact that communicating manually with dozens or hundreds of candidates, it is very time-consuming and humanly impossible.

According to Careerbuilder[13], candidates expect a fast and easy application experience and many are not willing to wait for feedback for more than two weeks of applying. Therefore, improving communication with candidates is crucial to provide a great candidate experience and enhance your employer brand. And recruiters can leverage AI to automate email communication or use chatbots, for instance, to keep candidates engaged without having to invest their time.

Another way of improving the candidate journey right from the beginning is by providing clear job descriptions to set truthful expectations. Augmented writing tools can assist recruiters in this task by evaluating job descriptions and making improvement suggestions to avoid any ambiguities or contradictions. Candidates value accurate job descriptions and that strengthens the employer's brand.

13 · http://press.careerbuilder.com/2018-10-30-Job-Seekers-Are-Now-in-the-Drivers-Seat-and-Expect-Next-Gen-Recruiting-and-New-Hire-Experiences-Survey-Finds

Moreover, using an AI-based recruiting tool allows companies to run a recruitment process with a clear and streamlined workflow. By allowing recruiters to manage the recruitment steps more efficiently, by enabling a good level of engagement throughout the entire process with automated communications, and by allowing to provide candidates with timely updates on their application status, AI can ultimately help to enhance the whole candidate experience.

5 · · · · ·

Turning Recruitment More Cost-Effective

Every time a new employee gets hired companies invest in training, onboarding and compensation. Hence, making bad hires can cost them a lot in terms of money, resources, reputation, etc. That said, we know that hiring the right candidate for a position is crucial for business success.

By leveraging AI to find and hire the right fit for a role, recruiters increase the chance to make the right hiring decisions, reducing turnover and driving a more efficient process. In addition, companies will be able to allocate fewer resources to the less valuable part of the recruitment itself, saving money that can be invested in more important areas of recruitment.

6 · · · · · ·

Enabling Data Protection

Data protection can be very challenging when you are running a traditional recruitment process. The GDPR, in Europe, and the many sector-specific, federal and state level US laws, such as the recently enacted California Consumer Privacy Act (CCPA), have empowered people with fundamental rights such as the disclose of the personal information collected, of the sources from which the personal information is collected, of the business or commercial purpose for collecting or selling personal information, and of the third parties with which companies share personal information.

As important, these regulations introduce the right to request access to and deletion of personal information, and the right to opt out of having personal information sold to third parties. Obviously, these requirements force changes to companies' privacy policies and operational compliance procedures.

Regarding recruitment, automating recruitment processes with AI helps companies with legal compliance. For instance, using an Applicant Tracking System (ATS) allows to centralise candidates' data in a single database, instead of having it spread in different files in different departments of the company. Moreover, using an ATS makes it much easier to manage and to delete data when candidates require so, through automatic compliance of removal.

While it may appear as though complying with these regulations can compromise the training of algorithms given that deleting data at the user's request makes our datasets become smaller, it is possible to balance machine learning and data protection. The key to not losing data volume is to anonymise the data of candidates to be deleted in a way that it would be impossible or impracticable to identify them. This goes to show that it is possible to train AI models while guaranteeing the candidates' privacy.

Benefits of Using AI in Recruitment

Faster Hiring Process

Improved Quality of Hire

Unbiased Decisions

Enhanced Candidate Experience

Cost-Effective Recruitment

Data Protection Compliance

· Joana Urbano
Data Scientist @skeeled

Responsible AI

AI is not either magic or dark science. Regardless of whether the area of AI is robotics, machine learning, computer vision, or, more generically, narrow AI, general AI, or even artificial superintelligence, we know that all of these underly on well-proven algorithms solidly grounded on mathematics, statistics, neuroscience and potentially other multi-disciplinary areas, depending on the specific use of AI.

However, the growing use of AI embedded in existing products and solutions is raising different types of doubts and concerns amongst users of these solutions, mostly related with ethics, fairness, compliance with regulations and law, and privacy of data.

At skeeled, we know that from our own experience. Now and then prospect recruiters ask us how safe it is to use AI-based software, how fair and unbiased matching decisions are, how private

and secure is the candidates' data, or even if skeeled's app is GDPR compliant. And these are quite relevant questions that spread among users of AI-based products and that the AI community is very attentive to.

In fact, Responsible AI has emerged as a new discipline to address these questions. It embeds a set of principles that should guide the development and use of AI-based solutions in order to guarantee that they provide the correct levels of security, privacy, fairness, ethics, transparency and governance.

At skeeled, we have our own Responsible AI program, which is based on three fundamental premises:

- Recruitment decisions should be done by recruiters
- Automated decisions should be correct, fair and unbiased
- Users data should be used only according to their expectations

This translates into different principles that guide the development of skeeled AI-based solutions. For example, skeeled AI solutions should be designed by a diverse and multidisciplinary team of data scientists, recruiters, psychologists and customer success specialists, and top management must have a word to say on these solutions, in order to guarantee that they are in accordance with skeeled organisational values and societal laws and norms.

In the same vein, a diverse set of team members trained on bias and fairness should periodically monitor and rectify the data that will be used to train our algorithms, and even to randomly make blind decisions in parallel to the algorithm decisions. This allows us to prevent our algorithms from learning from biased or unfair decisions.

In addition, this allows us to control the extent of automation that is possible at any moment, as skeeled commits to only automate processes for which we know the automated decisions are correct and fair at a high extent.

> "Neutralising terms that denote gender, age and ethnicity from the training dataset, the use of international standards for educations, experiences, and skills, as well as revising the results of automated decisions for correctness and confronting these decisions with data demographics, are some of the techniques that help removing bias from the training dataset."

Skeeled is also committed to find transparent AI solutions, following the principle that AI decisions should be explainable to users when requested. This means that data scientists that traditionally look for machine learning algorithms that provide high accuracy in the specific problem at hand should now also consider the explainability directly or indirectly (through external tools) provided by these algorithms.

In fact, transparency is of utmost importance in the recruitment domain and skeeled next version of the pre-screening algorithm will include a feedback functionality that allows recruiters to understand how the algorithm evaluated the candidates to a given job.

Our Responsible AI program also includes different other principles of governance, including those concerned with the privacy and security of users' data, their right to be forgotten, and more generally the compliance with GDPR and similar regulations.

Last, but not the least, skeeled AI solutions aims at providing the right tools to recruiters in order to allow them to make more informed decisions. We firmly believe in the human in the loop paradigma, leaving the most important decisions to the recruiter.

As an example, our pre-screening algorithm automates the time consuming task of deciding which candidates are clearly not a fit to current job opening and which may advance for further analysis. However, it is up to the recruiter to accept, or not, the automated decisions.

In conclusion, due to the pervasive use of AI in everyday's products and services, it is of paramount importance that users trust these AI solutions and understand how AI decisions are made and that means organisations have to attenuate possible bias and unfairness and to account for transparency and accountability.

At skeeled, we work everyday to improve our Responsible AI program and to guarantee that our AI solutions are fair and trustworthy.

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Key takeaways

AI is disrupting the recruitment industry and is increasingly playing an essential part in the improvement of the recruiter's role.

As an enabler tool to assist the recruiters, AI increases their productivity and efficiency and enhances the decision-making process.

From our own experience with AI, we can highlight how it enables faster decision making and frees the recruiter to focus on other value-added tasks. AI-based sourcing increases the diversity of candidates and allows recruiters to reach passive candidates, while responsible AI guarantees unbiased and fair automated decisions and GDPR compliance.

All of these benefits are already creating a positive impact on the way recruiters do their job. By having more time to engage with candidates, recruiters can actually make the recruitment process more human and thoughtful which improves the candidate experience and strengthens the company's employer brand.

About skeeled

skeeled helps companies hire the right people faster with an artificial intelligence-based recruitment software.

Our mission is to bring to the job market the most modern and innovative hiring process with a new approach towards how candidates apply and how recruiters can be supported.

We offer an all-in-one, online software that digitalises and automates the first steps of the recruitment process, saving recruiters a great amount of time and allowing them to focus on the best talent.

Our solution is modular and flexible according to your needs. Our innovative technology includes great features such as automated publishing of job offers, automated CV screening, personality evaluation assessment, structured video interviews, collaborative commenting tools, advanced tracking functionalities and many other.

From corporations to small businesses, recruitment teams love working with skeeled.

skeeled

HIRE THE RIGHT PEOPLE FASTER

With Artificial Intelligence Based Recruitment Software

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