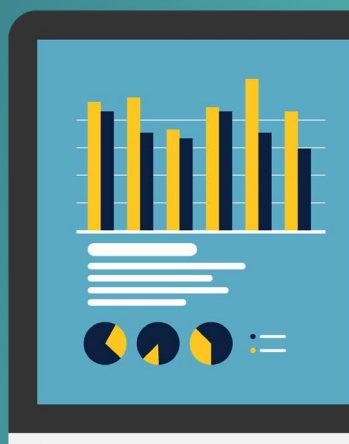
TALENT TECH LABS

PROVIDER INSIGHT REPORT

AN INTRODUCTION TO AI-FIRST RECRUITING



INTRODUCTION

Even before the current pandemic and the subsequent economic fallout, talent acquisition teams had been looking for ways to do more with less, and this driving need for efficiency and innovation has only intensified over the past few months. Today, companies are seeking efficiency by nearly any means possible, exploring ways they can potentially transform their hiring processes to make them more effective. AI, or artificial intelligence, is one of the most promising mechanisms for doing just that.

We believe we are in the early stages of what we call "AI-first recruiting", and that AI will have a profound and transformative impact on Talent Acquisition (TA) and how companies recruit. In this whitepaper, we introduce and define key concepts around artificial intelligence, discuss the current state of play, explain how AI is already manifested today in recruiting technology, and give a glimpse into where the industry is headed and what that means for your organization's TA technology investment decisions.

The Vision and The Reality: Sentience Versus Prediction, Narrow and General AI

What is AI capable of, and what impact can it have on recruiting? To answer that, we first need to understand what AI is and what it can actually do. First, there are two overarching "categories" of artificial intelligence: "general" AI (sometimes dubbed "AGI", or artificial general intelligence), and "narrow" AI.

Narrow AI is the prevalent form of AI systems in use today; these are tools built and trained to solve a specific problem, typically narrowly defined (e.g. voice-to-text transcription, recognizing the various elements in an image, natural language processing and understanding, beating a video game, training a robot arm to respond to a real world environment, creating job title and skill taxonomies from unstructured real-world job and hiring data, etc.).

More advanced AI systems may combine multiple domains. For example, a system might employ natural language processing to extract and analyze data from an uploaded resume and/or conversational data collected from a chatbot, and combine it with an AI-based matching system to then determine relative fit for outside candidates or current employees against open roles.

General AI is the pursuit of a broad and generic software "sentience" which more or less spans all domains, and can learn and solve problems much as a human would, though on a vastly (almost unimaginable) faster and larger scale. With such a system, users would be able to provide human-like queries, such as "Email all the students who will graduate from Harvard or Yale this year with some info about our company and send them a nice email seeing if they'll attend a private job fair sometime in July," and the system would be able to parse the request, understand its meaning, and be able to actually execute the request. While there is notable work being done in this area (e.g. OpenAI's GPT-3, a system trained on the whole of the internet with billions of parameters), there is not yet any AGI system in production. If such a system is developed/deployed, there will be vast implications for humanity and human productivity.

In short, all AI applications today are some combination of “narrow AI” — software that was built to solve a specific problem — and its defining characteristic is that the software can “learn” and “adapt” without having been programmed to do so. The most advanced systems combine multiple domains with incredible amounts of data and compute power to solve increasingly complex problems (e.g. Tesla using vision recognition and machine learning to power autonomous vehicles or Eightfold using neural networks to perform job model mapping and matching).

True AGI — a “sentient” system/AI model that can be applied to multiple domains — is still a ways off, though given the current state of advancement it seems likely that we will see such a system developed and deployed within the next ten to fifteen years.

The natural evolution of bespoke point solutions is the concept of a “platform” purpose built for supporting AI, which can help organizations take advantage of a combination of multiple domains. We explore this trend in more depth later in the whitepaper.

Overview: The Three Types of AI

Narrow AI

All AI applications today are some combination of “narrow AI” — software that was built to solve a specific problem.

AI Platforms

A “platform” purpose built for supporting AI, can help organizations take advantage of a combination of multiple domains.

AGI

True AGI — a “sentient” system/AI model that can be applied to multiple domains.

The What and How of AI

It’s also important to understand the “how” of AI, if for no other reason than to be able to converse intelligently with vendors that purport to use AI in their solutions. Below are some of the main methods by which AI systems are developed.

Machine Learning

Machine learning is a method of building an AI whereby it is first “trained” on input data, and then the algorithm “learns” from new input data. It essentially uses advanced statistics and a lot of data to make predictions about different things (such as which candidate is more likely if hired to stay at an organization for more than six months, or which employee is most likely to leave if given a job offer). Generally, machine learning is used to make predictions or probabilistic estimates.

Supervised Learning

This is when the vendor or programmer provides the underlying structure or schematics that an AI algorithm uses to do its intended work. For example, an AI designed to identify bananas might be trained on thousands of pictures of bananas that had been tagged “true” or “false” depending on whether or not the pictures contain bananas. In a recruiting context, this can happen when vendors try to model what “good” looks like, e.g. feedback adjusting parameters on an early hire assessment or building constraints in a conversational chatbot.

Unsupervised Learning

With unsupervised learning, the AI is fed unstructured data and it builds its own relationships and taxonomy. This can be a useful method for discovering hidden patterns and relationships in data. Applications in recruiting include building job and skills taxonomies (e.g. skill X and Z are related to each other) or for natural language processing.

Deep Learning/Neural Networks

Deep Learning describes a class of machine learning techniques that mimics how the human brain works. It uses multiple layers (“neural nets”) of analysis to determine the optimal features needed to reach an accurate prediction for new input data. Typically, processes at this level require a much larger volume of training data than other classes of algorithm (i.e. they are harder to build and implement), but the advantage is that these can be much more flexible in successfully handling new situations.

Smoke and Mirrors versus Actual AI: Applications of AI in Talent Acquisition

Because of the large potential artificial intelligence entails, and partially because investors were throwing large sums of money at startups building AI-based solutions, nearly every talent acquisition technology vendor claims to use “AI” in its offering in some capacity. For example, according to a study undertaken by Talent Tech Labs in 2017, more than 90% of surveyed talent acquisition technology vendors reported their offerings either already included an AI component or that one was on the roadmap. That said, in our view, the majority of AI applications in talent acquisition to date have been rudimentary, and many are more smoke and mirrors than actual AI.

However, not all is hype. There are promising companies and tools leveraging AI to help clients make better hires faster at scale, and vendors are continuously pushing the field to new heights. AI is already being used (to varying degrees) in nearly every part of the recruiting function. In recent years, AI in recruiting has evolved into a few bespoke, and typically narrowly executed, point solutions which are outlined below:

AI-Based Job Matching

These technologies extract relevant data from candidates’ resumes (or an online profile) as well as from the job description. This realm started with the boolean-based keyword search, evolved into semantic matching, and the most advanced systems today not only understand the data as it it is provided, but can make and incorporate into their decision making recruiter-like inferences such as skills a candidate likely has but has not explicitly reported, and related roles/open jobs for which a candidate would be a good fit (though they did not apply and it might not be obvious based on their work history).

Gamification and Other AI-Based Assessments

This is a relatively new area, and involves companies that incorporate AI-based modeling into the assessment process, either via bespoke assessments (often structured as interactive games or short quizzes), or using machine learning to better make inferences/predictions based on current processes (e.g. by analyzing recorded video interviews or phone screens). It's important to note that all assessments — AI-based and otherwise — have the potential to introduce bias if done improperly. A fuller discussion of mitigating bias and the ethical use of AI in a hiring context is provided later in this whitepaper.

Conversational AI

Conversational AI are bots that can interact with humans in a natural and fluid manner (typically but not always text-based), understand the context and intent of a conversation, and respond to requests without having to be explicitly programmed with decision trees. The field of conversational AI is far broader than its application in talent acquisition; however, even within just the recruiting world, there are a host of firms building conversational AI that can converse, engage, and interact with candidates in both an inbound and outbound fashion.

Sentiment and Textual Analysis

Solutions in this area analyze job descriptions and look for ways to improve and make them more effective, making specific recommendations about text to add, remove, or rewrite.

Predictive Analytics

More a feature of multiple solutions than a specific "point solution", this refers to capability to systems to make predictions, and in cases where the capability is enabled, decisions. Examples might include a system that shows what day of the week and time a recruitment marketing message is most likely to be responded to or which current employee is most likely a flight risk.

Job Spend and Media Management

Still a burgeoning area and more programmatic/rules-based in nature than AI-based, these solutions can "manage" job spend and job ad buying decisions with a goal of optimizing overall ROI.

Career Site Personalization

A career site experience can be designed to simulate a modern web-store (or Netflix browsing) experience, with content displayed that reflects the attributes and interests of the specific candidate on the site. This can lead to a vastly superior candidate experience, and there are indications that it can also improve diversity hiring.

WHAT IS AI-FIRST RECRUITING?

We think there are significant competitive advantages to be had by properly leveraging AI in the recruitment process. We also think that, though the line is often blurry, there is a difference between what we would call “AI-first recruiting systems” and technology companies that add an AI component to embellish the product as an afterthought. We believe AI-first systems will outperform their contemporaries over the long-term (specific metrics that companies have achieved already using an AI-first recruiting system are discussed in the following page). What is an “AI-first” recruiting system and how can you identify it?

The first tell is if a company defines itself first and foremost as an AI company. Companies that define themselves around AI tend to have that as the primary guiding light driving strategic decisions, product roadmap, and hiring. Thus, an AI-first company will tend to have more engineers and data scientists than peers in the same category, and its approach to problem solving and product development will naturally lead to AI permeating the solution. Applied AI is an outcomes-based approach, and two companies that both advertise AI-based solutions may have drastically different performance. In theory, the more domain expertise a company brings to bear, the better its solution will perform.

There Are Advantages to Leveraging AI in **Recruitment**

We think there are significant competitive advantages to be had by properly leveraging AI in the recruitment process.

Further, we are seeing the emergence of AI-based “platforms”, which bring together multiple domains of AI in a holistic offering, which is the natural evolution of the point solutions discussed above. The primary difference between these AI-based platforms and legacy HR systems of record (such as an ATS or CRM) is that with the former, AI is the distinguishing characteristic/common DNA that the user interface and various modules are built to support, and not the other way around.

One way to check whether AI is part of the “DNA” of a system is to test a firm’s underlying models against multiple domains or scenarios. For example, one method you might use to validate AI “DNA” in a system is to check whether the underlying models can work against multiple languages. The underlying statistical models should prove effective without having to address the nuances of specific languages or geographies.

Benefits of Using AI in the Recruiting Process

What drives decision making at most large organizations is bottom-line performance and metrics. When AI is thoughtfully applied within recruiting we have seen it quantifiably move the needle. This section highlights measures of recruitment efficiency, effectiveness and the strategic impact of implementing an AI-first solution.

For all the metrics below, the assumption is that a system is either currently not in place, or many separate solutions are used that are not integrated/used in a holistic way. The data was collected from specific firms that implemented a system, or a sampling of such clients, with the goal of providing generalized figures that an organization could expect after implementing an AI-based recruiting platform.

Baseline Outcomes

Most common metrics used across organizations. Improvements in these can lead to direct cost savings.

- Faster time to candidate interview (up to 65-80% improvement)
- Reduction in time-to-hire (faster time-to-fill, 30-35% improvement)
- Reduction in cost-to-hire (e.g., reduce cost per hire; reduce spend on agencies)
- Improve campaign response rates
- Increase in quality of hire (candidate relevance)
- Reduce candidate drop-off rates

Recruiter Efficiency

How well recruiters are performing.

- Reduction in time reviewing resumes and screening candidates
- 50-60% recruiting team time savings by automating the pre-processing of resumes
- Time spent scheduling and coordinating interviews cut by 48% - Large Asian airline
- Four to six hours saved per recruiter per week (reduction in time reviewing resumes and screening candidates)
- Increase number of hires per recruiter (e.g. at large RPA solutions provider the number of positions filled per recruiter per quarter raised 50%)

Sourcing Efficiency

How well can sourcing be automated?

- 30% reduction in time spent on intake meetings between recruiters and hiring managers
- Improve candidate relevance
- Delivered 4 and 5 star matched candidates in 10% of the time compared with it's normal Talent Acquisition process. (financial services firm, needs to remain anonymous)
- Large communications firm dramatically increased the percentage of candidates discovered deemed qualified, reducing number of resumes needed to generate a job offer by 50%.
- 20%+ higher inbound candidate quality
- Reduction in regrettable turnover with new hires
- Omni-channel candidate consideration across all jobs (e.g. system can include past applicants, employees, albumni, etc. against every open job)
- Up to 95% of talent pipeline can be generated from omni-channel consideration

Career Site Improvements

This area can have an impact on cost-per-hire and top of the funnel candidate flow.

- Increase number of inbound applicants
- Increase in conversion rates (up to 60% more visitor-to-applicant conversions)
- 35% of career site visitors upload a resume - Large Asian airline
- 89% of those who upload a resume apply for a position - (4x industry average) - Large Asian airline
- 50% of career site visitors upload a resume - Medical device and software developer
- 50% of career site visitors apply for a job and upload a resume - Publicly traded food supplier
- Internal talent redeployment went from 19% to 58% after a personalized career site launch coinciding with a large RIF event impacting several thousand employees (large Financial institution)

Diversity

(Under-represented groups, genders, Veterans) Improvement

- Resumes of underrepresented groups increased as a percentage of overall resumes sourced for business units and roles by 25%-35%
- Increased the hiring of women from 18% to 33%, — Large global systems developer and consultancy
- 90% reduction in time to discover and engage with underrepresented candidates — Recruiting operations manager at a financial services company

18%-33% Increase in the Hiring of **Women**

Increased the hiring of women from 18% to 33%, — Large global systems developer and consultancy

AI ETHICS

AI ethics is a relatively new field of study, but will become increasingly important as AI-based technology and systems permeate business, society, and our personal lives. AI ethics can be thought of as the answer to the question, “What outputs should an algorithm be designed to optimize, and what means or inputs are we willing to accept to achieve those outcomes?”

When not specifically accounted for, AI can quickly run awry. Algorithms reflect the data they are trained on, and unless addressed, can reinforce existing biases or even introduce new ones. It is critical that the AI systems and their underlying algorithms are transparent, explainable, explicitly designed to prevent bias, and augment human decision making instead of removing it.

The good news is that thoughtfully applied AI can be a force for good. For example, AI models that allow companies to “hire for potential” enable firms to discover talent for roles that certain individuals may have historically been excluded from.

AI Can Be a
Force for Good

We think there are significant competitive advantages to be had by properly leveraging AI in the recruitment process.

These can be extended to “capability matrixes” that highlight what individuals are capable of doing or help create a career path for the next two to five years. “Equal Opportunity” algorithms don’t use sex, age, pedigree, or other characteristics that can trigger bias, while “diversity dashboards” can identify deviations and dropoffs (revealing bias, whether conscious or unconscious).

Getting Started and Planning Your AI Journey

The journey to AI-first recruiting is not as difficult nor complicated as it might sound. It starts with identifying and understanding the business problems facing your organization, understanding the capabilities of solutions on the market, and then planning and executing a strategy to address those challenges. While there is no silver bullet, we think the solution to many of today’s most pernicious Talent Acquisition challenges can, and will, be solved via AI-based solutions.

We are on the cusp of a revolution in TA, with the lines of human and machine interactions yet to be fully defined. Despite the many challenges we all face in the current environment, if ever there was a time to be excited about the future of recruiting, it is now.

EIGHTFOLD OVERVIEW

Elevator Pitch

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 deep learning artificial intelligence platform empowers enterprises to turn talent management into a competitive advantage.

Company Overview

eightfold.ai

Number of Clients: More than 100 enterprise companies

HQ (City/State): Mountain View, CA

Year Founded: 2016

Cumulative Funding: $85 Million

Problems the Solution is Designed to Solve

Eightfold created the Eightfold Talent Intelligence Platform to employ AI to fundamentally improve how enterprises retain, hire, reskill, and upskill diverse workforces.

Target Client Demographic and Industry Specialization

Target large enterprises at two tiers of scale –organizations with 5,000 to 25,000 employees, as well as organizations of 25,000 employees and higher – notably global brands in Financial Services, High Technology, Semiconductors, Life Sciences, Consumer, Telecom, as well as State and Federal organizations.

Eightfold Case Study

Air Asia is a leading travel and financial platform company in Asia Pacific, providing air transport, travel and lifestyle services, as well as financial services. AirAsia started as a low-cost carrier with operations in Malaysia, Indonesia, Thailand, the Philippines, India, and Japan, and has carried more than 600 million guests to over 150 destinations in its network across Asia, Australia, the Middle East and the US.

Description Client Challenge(s)

- Candidate customer experience was challenging
- Screening a very large number of resumes and scheduling interviews imposed a heavy burden on recruiting teams

Approach and Recommended Solution

By adopting the AI-powered Talent Intelligence Platform from Eightfold, AirAsia reduced costs, became more efficient, and accelerated the complex process of finding the best qualified candidates to continue to exceed customer expectations.

Notable Challenges

- Faced … the ever-growing challenge of finding highly qualified candidates for a large number of positions (flight operations, technical functions, corporate functions of an airline)
- The complexity of hiring personnel in different countries and in a broad range of positions … "the way a person applies for a position can vary between countries"

IMPACT AND RESULTS

- **35% of career page visitors** apply for a position
- **80% increase in the speed** with which high-potential candidates moved to the interview stage
- "By automating the pre-processing of so many resumes, it saves an extraordinary amount of time - **about 60%** - for … recruiting teams"
- Time spent scheduling and coordinating **candidate interviews cut by 48%**

Additional Benefits:

- The ability to match candidates passed over for one position with another job that's a better fit;
- Inclusion of existing employees in the search for ideal candidates;

About Talent Tech Labs

Talent Tech Labs is on a mission to elevate the state of the art in recruitment through technology. We do this by equipping top corporate talent executives and staffing company leaders with the right mix of market intelligence, industry insights, human guidance, and decision support.

We are the only research and advisory firm entirely focused on Talent Acquisition (TA) technologies. We are 100% independent, which means our information is free of bias. From an agnostic point-of-view, we demystify the complicated, emerging TA technology landscape, so buyers can make the best decision. Ultimately, we empower buyers to choose the right tools and solutions wisely and confidently in order to attract and hire the talent they need to succeed. To learn more about TTL, visit our website **here**.

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