WHITEPAPER

AI at SmartRecruiters

Software for Superhuman Hiring™

Second Edition, January 2025

SmartRecruiters

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Disclaimer: AI-based tools are subject to regulation in some jurisdictions. Readers are advised to use these tools in compliance with their organization's internal policies and applicable local regulations.

This document represents the state of AI at SmartRecruiters as of January 2025. Due to the speed at which AI technology is evolving, this document will be updated as our AI technologies grow and change. SmartRecruiters is committed to adapting our offerings to comply with evolving legislation around the globe.

Introduction

The rise of artificial intelligence

The accelerating pace of technological change, evolving hiring challenges, and ongoing cost-related business pressures have created great interest in using artificial intelligence (AI) in recruitment to unlock hiring efficiency. Now that AI and Generative AI (Gen AI) are part of many people's daily lives, more companies are interested in safely integrating AI into their business practices.

AI at SmartRecruiters

SmartRecruiters began its AI journey in 2018 with the release of SmartAssistant, an AI-based matching tool. SmartPal, a candidate chatbot, was released in 2020. In 2024, the company released two AI Copilots. As we enter 2025, Smartrecruiters is doubling down on AI with the launch of Winston, an AI-powered recruiting companion who anticipates, automates, and adds a touch of joy to the hiring process.

2012
SmartRecruiters **first customer**

2018
Matching tool **SmartAssistant**

2020
Chatbot **SmartPal**

2024
AI Copilots
SmartAssistant
Skills Taxonomy

2025+
Winston

The SmartRecruiters mission
To humanize hiring in the age of automation

AI Overview

AI technologies used at SmartRecruiters

SmartRecruiters customers can choose from various AI tools to reduce recruiter workload and personalize relationships with candidates at scale.

Product	AI/ML technique	Customer Access

SmartAssistant
Generates AI-powered Match Scores and Recommendations for candidate profiles based on each advertised job
	• Natural Language Processing (NLP)* models
	  • Fine-tuned NER
	  • Fine-tuned e5
	• Proprietary Deep Learning models (natively built)
	• Classic Regression techniques (natively built)
	• LLMs
	  • Claude Sonnet 3.5 by Anthropic for annotation
	  • Mistral 7B for skill mapping evaluation
		Add-on product available to users of SmartRecruit

Scorecard Copilot Drafts interview questions with Gen AI	• LLMs used are hosted on SmartRecruiters' regional cloud infrastructure to ensure data security for Customers† • Mistral / Zephyr 7B	All customers of SmartRecruit
Job Ad Copilot Drafts job ads including description and qualifications with Gen AI	• Claude Sonnet 3.5 by Anthropic hosted on existing SmartRecruiters' regional cloud infrastructure to ensure data security for Customers†	All customers of SmartRecruit
Communication Copilot Drafts candidate communications with Gen AI	• LLMs used are hosted on SmartRecruiters' cloud infrastructure to ensure data security for Customers† • Mistral / Zephyr 7B	All customers of SmartRecruit All customers of SmartCRM

SmartPal
Chatbot personalizes the candidate experience by automating candidate conversations
	• Natural Language Processing (NLP) models:
	  • Word embedding (spacy)
	  • Logistic Regression (intent classification)
	  • Conditional Random Fields (entity extraction)
		Add-on product available to users of SmartRecruit

*See the Glossary in the Appendix for definitions of AI-related terms.

† SmartRecruiters has data centers in the United States, Germany, and Australia. Customers choose their data location preference before implementation.

SmartRecruiters' approach to privacy, bias, and data protection

We take compliance and privacy as seriously as our customers do. The following list offers our approach to matters of privacy and compliance.

Data privacy

Every piece of candidate data used to train our models is anonymized and the entire identification chain is broken. In other words, no personal data is used to train our algorithms or AI models; we remove names, age, sex, ethnicity, email addresses, phone numbers, employer names, university names, and other potentially biased identifiers from training data sets.

Preventing bias

SmartRecruiters does not collect data such as age, sex, sexual orientation, ethnicity, political affiliation, or religion on behalf of its Customers. The AI system does not process photos or videos. Inputs that are collected, which for the most part are chosen by customers, are anonymized to reduce the risk of bias. For example, we remove the names of universities and employers from training data and ranking generation to ensure hidden human bias does not lead to biased model results.

As required by the New York City Law 144, the SmartAssistant AI-based product passes an annual independent third-party audit for bias.

Please see the section How SmartRecruiters mitigates bias for more information on our approach to bias.

Internal development and data hosting

All machine learning models, including LLMs, are hosted on SmartRecruiter's cloud infrastructure to ensure data security for Customers. Models include a combination of models developed in-house by SmartRecruiters, customized open-source models, and third-party models available within the cloud services offering in locations fully compliant with laws, regulations, and our security and data privacy policies.

Data security

Data always remains on the customer's instance of SmartRecruiters. Please see the appendix for a depiction of the SmartRecruiters data environment.

Legal oversight

The SmartRecruiters Data Protection Officer (DPO) is involved in the review of relevant privacy regulations to provide recommendations to ensure that products and processes are in compliance. SmartRecruiters has an internal audit team and regularly undergoes mandatory and self-imposed audits.

Human decision-making

SmartRecruiters' AI products don't replace human decision-making in hiring. AI-generated scores cannot be used as a criterion for automating hiring processes such as making offers, rejecting candidates, or moving candidates to a new stage. While human oversight is part of the product design, users should still be trained in AI literacy so they don't overweigh said recommendations.

Customers have full control

SmartRecruit, SmartRecruiters' core applicant tracking software, has been designed for ease of configuration around compliance-related topics. With just a few clicks, customers can control user access to specific features, set local preferences for candidate data deletion, confidentially capture candidate diversity data, and build compliance reports. Customers always have a choice of which AI tools to use in their recruitment processes.

Security credentials

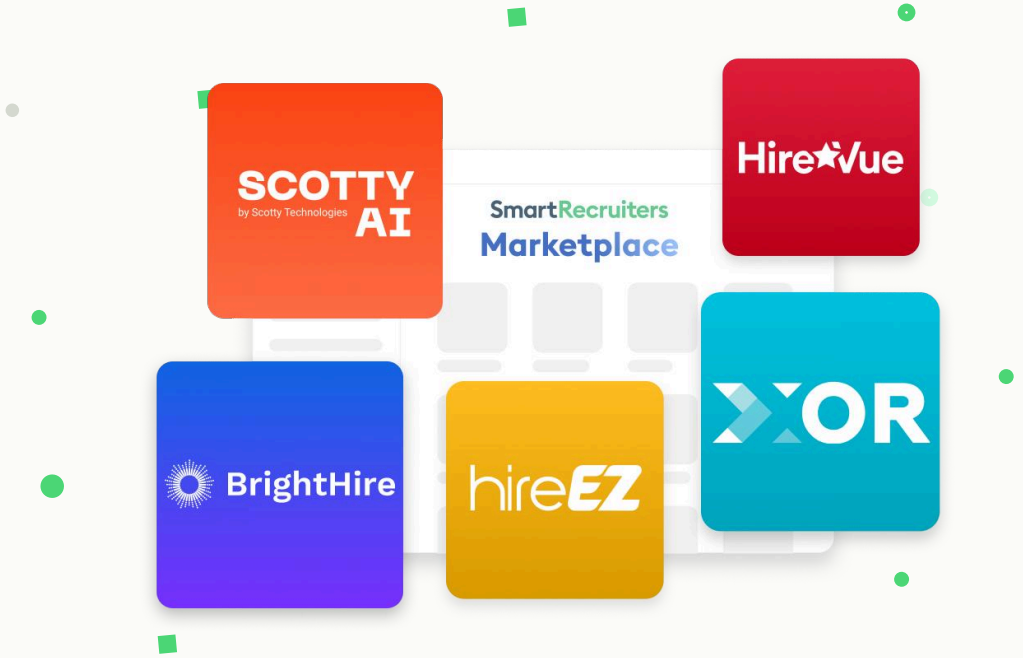
SmartRecruiters is ISO 27001 certified and undergoes an independent, third-party SOC 2 Type II audit annually.

Marketplace for AI-based point solutions

Connection to the talent acquisition ecosystem is one of the core principles of SmartRecruiters.

Our Marketplace of hundreds of partners offers many AI-based solutions, including tools for sourcing, assessments, interviewing, and onboarding.

SmartRecruiters' open APIs enable customers to configure connections with systems outside the marketplace.



Productivity

Supercharging hiring team efficiency

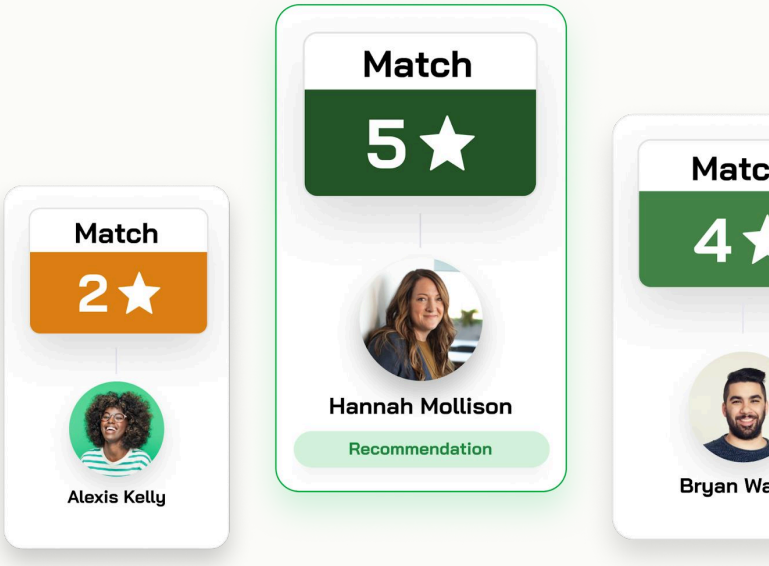
Hiring productivity is most frequently related to speed and quality. Moving candidates through each stage quickly is a marker of hiring success; the faster a candidate can be hired, the faster they can deliver business value. As more companies move to skills-based talent management models, skills-based candidate filtering allows recruiters to screen applications more efficiently while aligning with organizational needs.

Shortlisting best-fit candidates from hundreds, and sometimes thousands of applications is one of the most time-consuming tasks for recruiters. Today's AI tools help candidates optimize their resumes and apply to more roles at a time, often increasing applicant volume and giving recruiters more work at the application review stage.

AI-enabled recruiters are better equipped to address AI-enabled candidates.

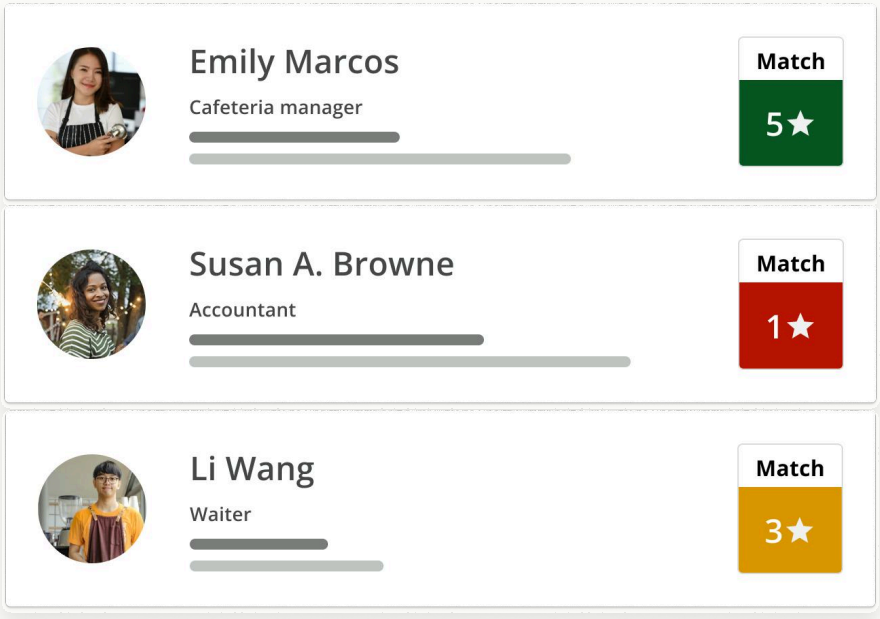
SmartAssistant

SmartAssistant is an AI-powered candidate discovery tool that takes the pain out of filtering applications. Its powerful AI is based on deep learning algorithms trained on historical data points from the CV screening process. This skills-based approach uses an NLP model for skills extraction, normalizes the skills to an Occupation-Skills Taxonomy by ESCO, and performs Deep Learning and regression techniques to arrive at a Match Score. SmartAssistant scores incoming applicants and provides candidate recommendations from past applications in the ATS and CRM.



Applicant scores help recruiters prioritize their screening process, while Recommendations help recruiters build robust talent pipelines efficiently and get the best ROI for advertising spend. In both cases, the skills-based approach also has the ability to discover otherwise hidden talent.

Companies can purchase SmartAssistant as an add-on to SmartRecruit. With the license, users can access SmartAssistant's two core products: Match Score and Recommendations. Access to SmartAssistant's features is managed by assigning seats to specific users.



Data use in SmartAssistant

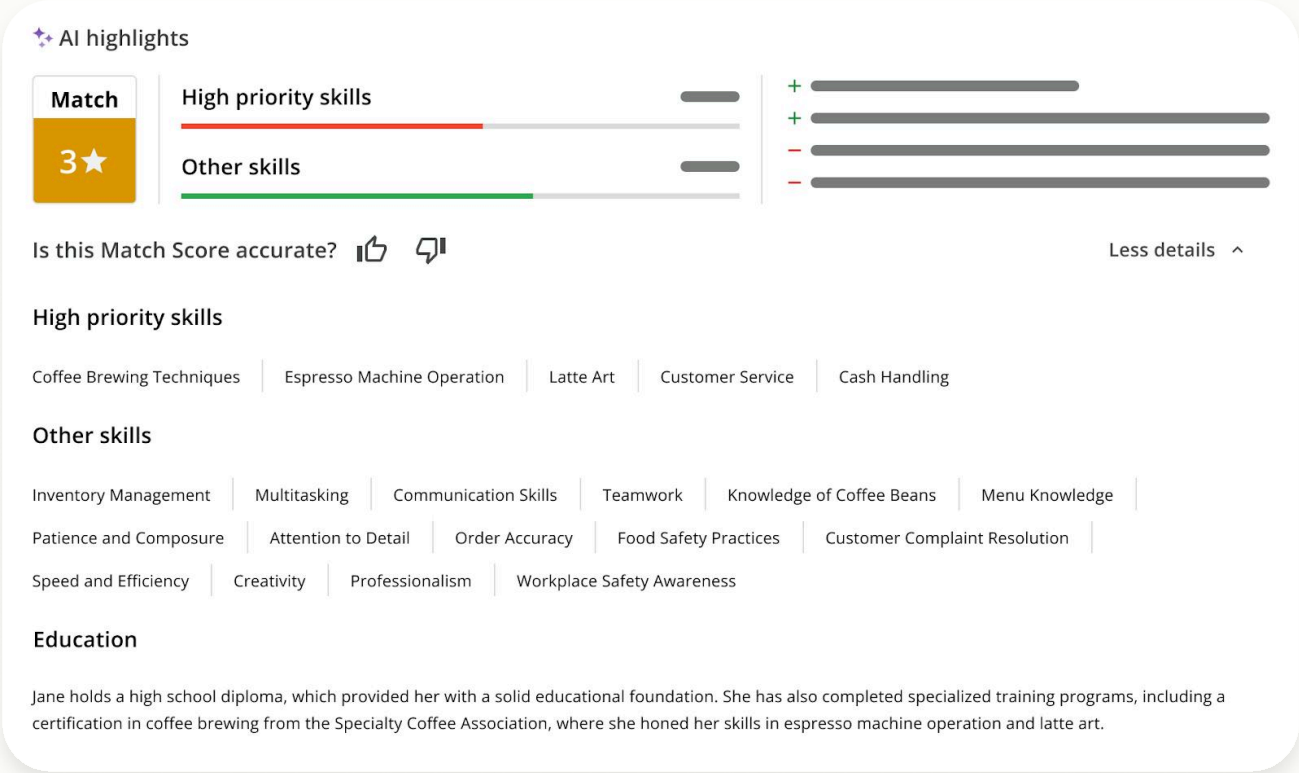
Every piece of candidate data used to train or test SmartAssistant models is anonymized. This means that no personal data is used to train the algorithm. Data is aggregated across applications and clients in the model used to calculate the Match Score to ensure that nothing can be directly attributed back to any one client or candidate.

Match Score

Match Score saves recruiters time by pre-screening and scoring each candidate on a 5-star scale based on their skill overlap with the job ad. It helps recruiters better prioritize the list of applicants based on whose profile is the best match. It does not make any hiring decisions; candidates are moved forward or rejected by recruiters.

The Match Score is a confidence interval of a candidate's fit for a specific job based on the skills overlap with the Job Ad. Match Score is a sliding scale, with scores of 4 and 5 stars considered high confidence in a good match, and 1-2 stars is considered low confidence in a good match.

The Match Score summary offers a high-level view of the Match Score by explaining how the candidate ranks across high-priority skills and other skills found in the Job Ad. The summary includes the candidate's star rating, the portion of high-priority and other skills found in the candidate's resume, as well as a candidate skill summary and an expandable details section with further information on skills.

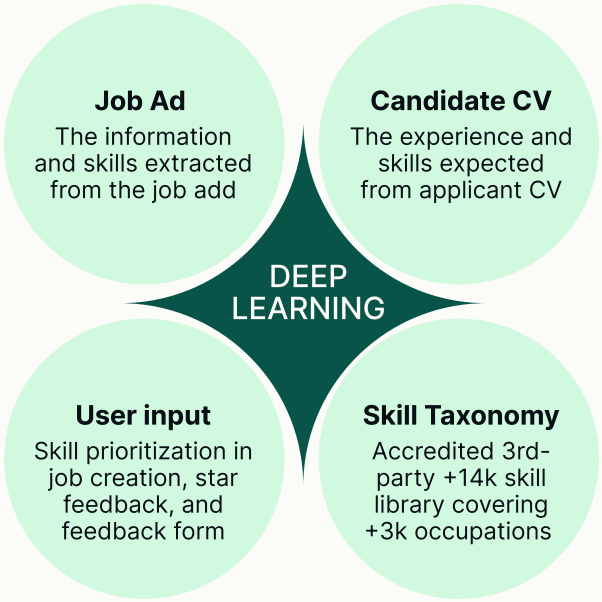


How the Match Score is calculated

SmartAssistant extracts key information from the following sections of the Job Ad: the job title, job description, and qualifications sections. This text is processed to infer and extract the skills required for the job. A similar process is applied to the candidate's CV and application that extracts relevant skills from employment history, education, and the resume's text content.

The skills are normalized using an occupation-skills taxonomy. This service uses the European Commission's ESCO classification, which covers nearly 14,000 skills and over 3,000 occupations. The Match Score is then calculated by comparing the skill sets from the Job Ad and candidate application (e.g., candidate CV) using a Deep Learning AI algorithm trained on historical SmartAssistant customer data to predict the likelihood of a candidate advancing in the hiring process past the CV screening phase. The model does not factor in the likelihood of being hired because interviews are often subject to human bias, and we do not have visibility to ensure this would not impact the model results.

The score is calculated when the candidate's application is added to SmartRecruiters. As the job details are a critical input to the calculation, each candidate is assigned an independent Match Score for each job funnel they are a part of. Match Scores are recalculated if there are any changes to the critical sections of the Job Ad. Candidates do not see their Match Score; this information is generally only shared with applicants as required by data transparency requirements.



Only data from the Job Title, Job Description, and Qualifications fields on a job are considered when calculating the Match Score. The Company Description field is not processed because it is usually more general and not specific to the job. To deliver a Match Score, the system needs enough information to extract a healthy amount of skills and experiences from the sections listed above.

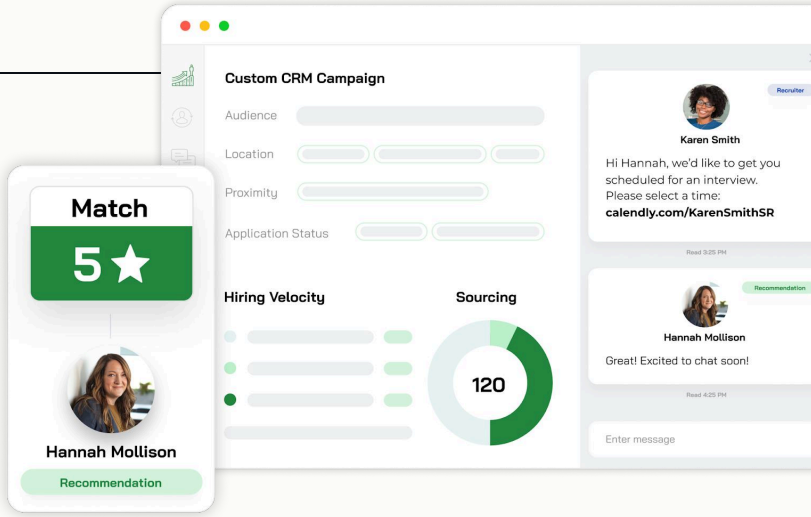
Case Study: SmartAssistant Boosts Recruiter Productivity for CPG Giant

For a global consumer packaged goods manufacturer, operational efficiency and the ability to meet deadlines are crucial to business success. As such, the hiring team sought to improve productivity while continuing to offer a delightful candidate experience. Before SmartAssistant, the hiring team spent an average of 48 days screening and vetting candidates, with multiple bottlenecks in the hiring process negatively affecting the candidate experience for applicants stuck in the pipeline.

After deploying SmartAssistant, the company cut its time spent screening applicants by nearly 35 days (from 48 days to 13 days). This translated to 73% time savings on repetitive processes—time that can now be spent on engaging and building meaningful relationships with candidates.

Recommendations

The Recommendations feature uses SmartAssistant's powerful matching algorithms to scan your previous applicant database and talent communities (if using SmartCRM) to suggest potential candidates for your new job opening. For example, when recruiters get a new job requisition, they can search for Recommended candidates who may be worth re-engaging about the new open position, helping recruiters quickly fill their talent pipeline for a new job.



How Recommendations work

When a job is posted or edited, SmartAssistant looks into the company's existing talent pools and past applicants to identify who might be a qualified candidate for a given role. The purpose of Recommendations is to augment a candidate pool beyond just the direct applicants for the current role.

Reccomendations allow recruiters to more quickly and easily fill the top of their pipeline with highly relevant previous candidates and maximize ROI from previous advertising and sourcing activitives.

Customers can view more details about a Recommended candidate by going to the candidate's profile. The AI-powered Candidate Summary includes the candidate's star rating, the portion of high-priority and other skills found in the candidate's resume, a candidate skill summary, and an expandable details section with further information on skills.

Case Study: SmartCRM + SmartAssistant Help Frasers Group Speed Up Hiring and Save Money

Frasers Group, a U.K.-based retailer, used SmartAssistant to shortlist and hire more than 20,000 candidates within its first year of using SmartRecruiters, reducing hiring times for seasonal hires from 40 days to less than 10 days.

By storing eligible seasonal employees and collecting candidates throughout the year in SmartCRM, in the second year, the Recommendations feature helped Frasers Group source 40% of its seasonal hires from the CRM, substantially reducing cost per hire.

"SmartAssistant gives us a systematic, automated method of sifting and selecting to create an over-indexed shortlist of pre-qualified candidates that our stores can use to get people booked in for interviews."

Adam Reynolds
Head of Talent, Frasers Group

Languages

SmartAssistant supports job ads and CVs in the following languages: English, Chinese, Croatian, Danish, Dutch, Finnish, French, German, Hungarian, Italian, Norwegian, Polish, Portuguese, Slovak, Spanish, and Swedish.

Personalization

Delivering personalized candidate experiences at scale

Each company has a unique mission, each job fulfills a unique purpose, and each candidate is a unique individual. Connecting the dots of company, job, and candidate is the human work of recruiters, and it's done primarily through communication. Using AI to streamline written candidate communications saves hiring teams time for the live conversations that truly help place the right candidates in the right jobs.

AI Copilots

SmartRecruiters' AI Copilots make creating candidate emails and interview questions easier. Users receive draft text that they can modify before setting up a scorecard or sending emails to candidates.

AI Copilots leverage tailored, open-source LLMs hosted on our own servers. We enrich the prompt with information from the company instance to produce a custom output.

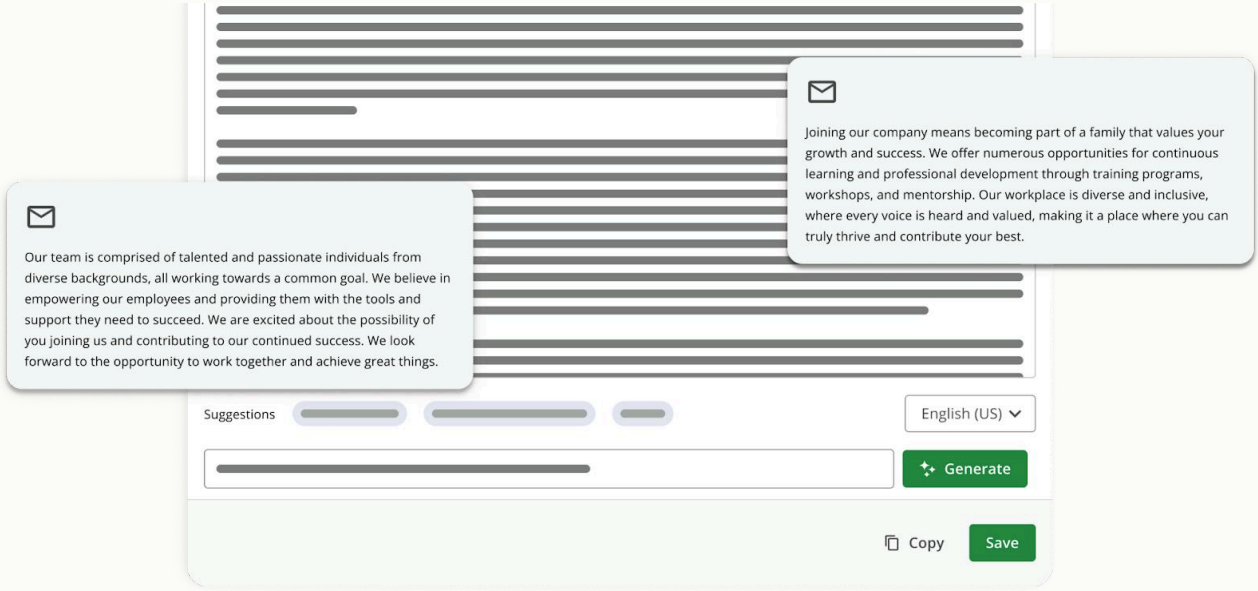
Data use in AI Copilots

No data leaves the customer's instance of SmartRecruiters, and no additional data is stored. User prompts and company information are used to generate text and are not stored. No customer data is used to train a third-party vendor LLM (e.g., ChatGPT).

Communication Copilot

Coming up with compelling emails to send to interested candidates can be a challenge for recruiters who engage with a multitude of tasks each day.

The Communication Copilot is trained to instantly create custom email messages based on user prompts and company information. Users can refine the text using simple prompts, edit the final version, and insert the content direction into the campaign editor. They can also copy and paste the text to use elsewhere.

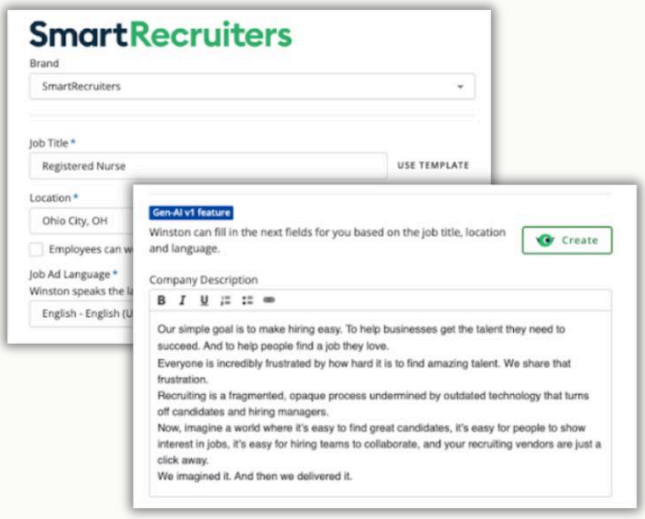


Languages

The default language is English, and the Copilot is also available in Spanish, French, German, Italian, Portuguese, and Dutch.

Job Ad Copilot

Creating a job ad from scratch can be time-consuming and repetitive. Recruiters and hiring managers waste time retrieving or rewriting boilerplate content. Now, users can simply input job title, location, and language and the copilot generates a job ad instantly – including company description, job description, and qualifications – based on your organization's past posts.

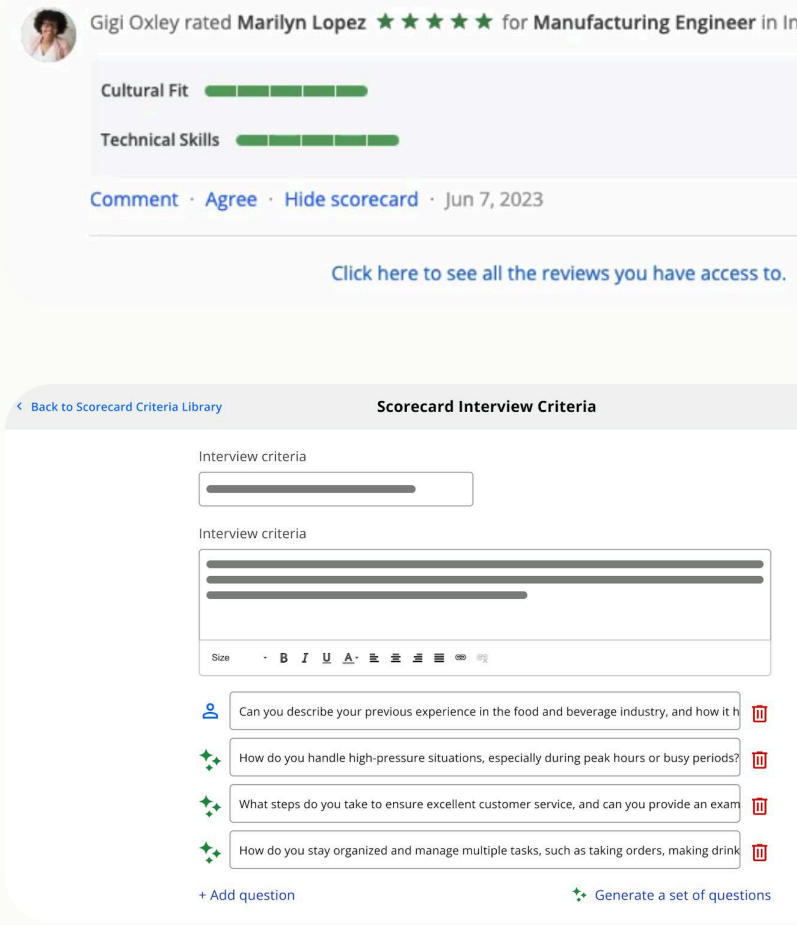


The feature reduces the time and effort required to create job ads and improves consistency across postings.

Languages

The default language is English, and the Copilot is also available in Arabic, Bulgarian, Chinese (traditional and simplified), Czech, Danish, Dutch, English (American & British), Estonian, Finnish, French, German, Greek, Hungarian, Indonesian, Italian, Japanese, Korean, Latvian, Lithuanian, Norwegian, Polish, Portuguese (Brazilian or Portuguese), Romanian, Russian, Slovak, Slovenian, Spanish, Swedish, Turkish, and Ukrainian.

Scorecard Copilot



Using Interview Scorecards helps companies streamline the interview process and evaluate candidates equitably by assigning specific questions to different interviewers. The Scorecard Copilot can improve Scorecard adoption and help customers build a more robust Scorecard library quickly.

The Scorecard Copilot improves the ease of creating new interview questions on the Interview Scorecard by suggesting questions based on the job details, existing scorecard questions (if available), and scorecard criteria.

The Scorecard Copilot creates a batch of three AI-generated interview questions to be inserted directly into scorecards specific to the job role. Users can manually edit or remove the AI-generated questions.

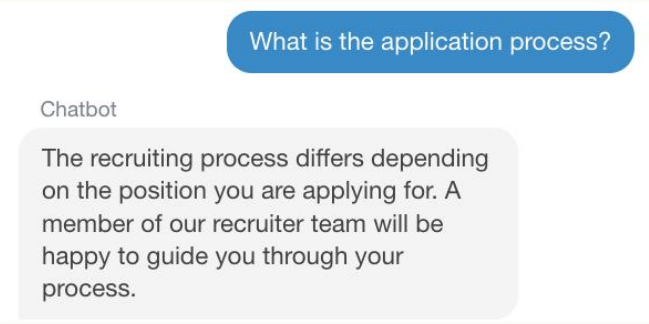
Languages

The Scorecard Copilot is currently available in English, French, German, Dutch, Italian, Portuguese, and Spanish. Useful results in other languages are not guaranteed.

SmartPal

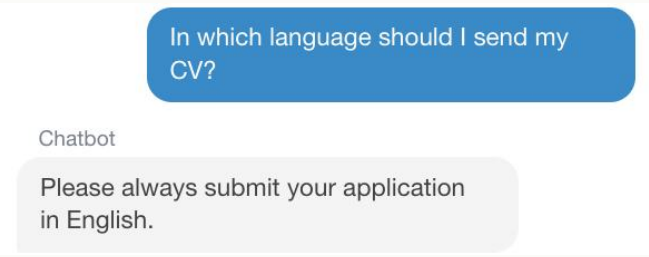
Candidates often have many questions when they first learn about a company. While employer brand sites may contain lists of frequently asked questions (FAQs), candidates may not take the time to look for them. Companies that can benefit from career chatbots include those that engage in high-volume hiring and large enterprises looking to engage talent at scale.

The SmartPal chatbot offers candidates an easier way to engage with a company's content, discover jobs, apply, and schedule interviews. By delivering content in the company's voice and tone, the chatbot can provide a branded experience that familiarizes the candidate with the company before human interaction occurs.



How SmartPal works

SmartPal leverages a proprietary Natural Language Processing (NLP) AI engine to deliver a responsive candidate experience, faster applicant conversions, and greater efficiency when handling interested candidates at scale. The answers given by the chatbot are set up by the customer and the models do not access external data. SmartPal requests user consent before engaging in a chat.



SmartPal is available in the following modules:

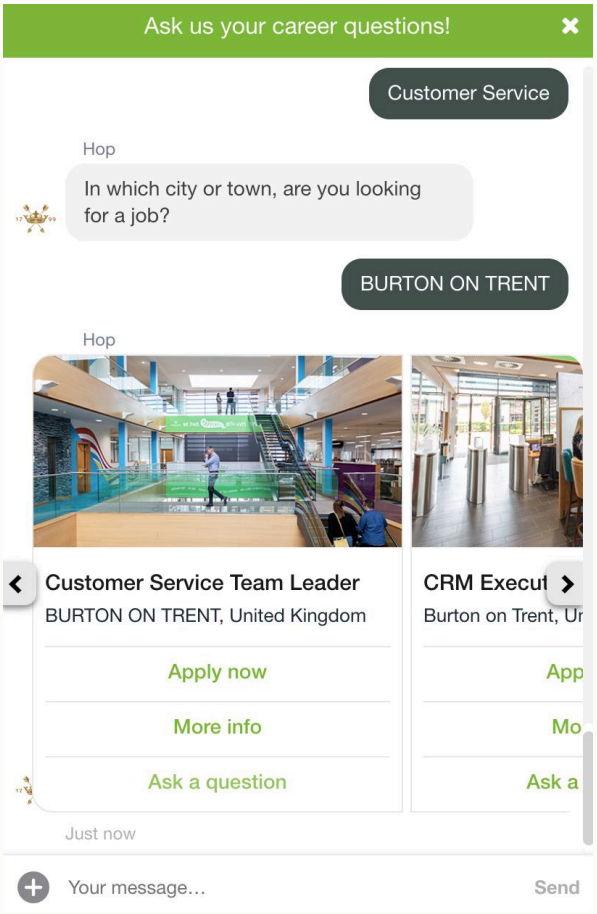
- **Discover**: Answers frequently asked questions and guide candidates toward job discovery
- **Text to apply**: Engages talent with QR or SMS short codes and guide them through the application and screening process
- **Schedule**: Schedules interviews at scale

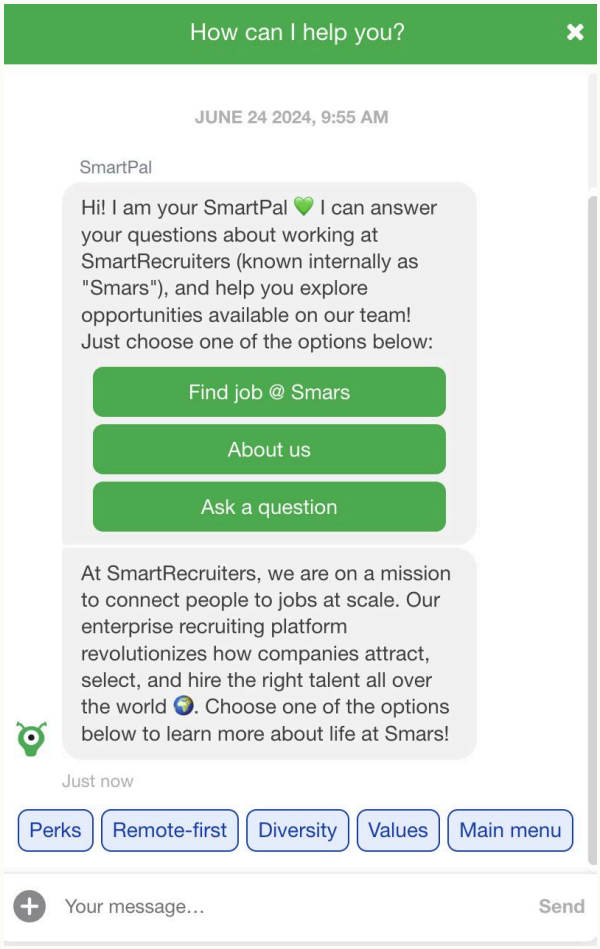
Languages

SmartPal is available in English, German (Formal + Informal), French (Formal + Informal), Spanish (Formal + Informal), Italian, Portuguese, Polish, Chinese (Formal + Informal), Dutch (Formal + Informal), Norwegian (Formal + Informal), Swedish (Formal + Informal), Turkish (Formal + Informal), Danish

Availability

Candidate chats can occur on the following platforms: website messenger, WhatsApp, SMS, Facebook Messenger, and WeChat.





Conclusion

The Future of AI at SmartRecruiters

Recruiting technology has long lagged behind the polished, intuitive experiences of consumer tech, leaving talent acquisition (TA) teams to navigate inefficiencies and fill the gaps. In today's competitive job market – where TA teams are lean, application volumes are overwhelming, and securing top talent is critical – organizations need more than just a traditional applicant tracking system. This is where AI steps in.

Meet Winston: Your AI-Powered Recruiting Companion

Introducing Winston, the newest addition to SmartRecruiters' suite of hiring tools. Winston is an AI-powered companion designed to anticipate needs, automate tasks, and bring efficiency—and even a bit of joy – to the hiring journey.

In 2025 and beyond, Winston will evolve with features focused on intelligent scheduling, conversational engagement, and multi-layer screening. These capabilities aim to create a truly agent-like experience, proactively supporting recruiters, hiring managers, and candidates at every stage of the hiring process.

Here's what you can look forward to with Winston...

Fewer time-intensive admin tasks

Accurate candidate shortlists

Motivated candidates aligned to your mission

Faster communication with conversational AI

Intelligent alerts and nudges that help, not annoy

Appendix

Supplemental information

AI Technology Glossary

Artificial Intelligence is a rapidly evolving and deeply technical field. As such, it is rife with jargon that often extends beyond the scope of many recruiters' daily lexicon. To better understand the core concepts behind AI technology, here is a list of definitions for common terms used in this whitepaper.

AI

Artificial Intelligence (AI) refers to technology that simulates human intelligence, such as the ability to process text-based conversations or speech. An AI agent is software that acts autonomously, taking input from its environment and executing specific actions.

Agent (Agentic)

An Agent (or an Agentic Experience) is a self-directed software program able to perform tasks and take actions with minimal or no human intervention.

Algorithm

Algorithms are designed processes or rule sets used by computers that solve problems. In AI, algorithms analyze data to create and train an AI model. The model makes decisions that undergo multiple rounds of audits and iterations to improve accuracy. Many AIs used today are so-called Narrow or Specialized AIs equipped to carry out tasks within a specific domain (e.g. recruiting or image recognition).

Anonymization

Anonymization is the process of removing all instances of Personally Identifiable Information (PII) to ensure there is no bias in a model's prediction. At SmartRecrutiers, we go even further to remove bias by also sanitizing all training data sets from potential sources of hidden human bias, such as university names and employer names.

Deep Learning

Deep Learning is a type of machine learning loosely inspired by the structure and function of the brain. It relies on a concept called Artificial Neural Networks to process huge volumes of data through multiple layered algorithms. As the data is run through each layer of the network, it often requires less data preprocessing by humans, and typically yields more accurate results than traditional machine-learning methods. Deep learning is commonly misunderstood as implying a “deeper” understanding of data.

Generative AI (Gen AI)

Generative AI is a type of artificial intelligence technology that can produce various types of content, including text, imagery, audio, and synthetic data by responding to users’ prompts. Generative AI tools that process written and spoken language are based on Large Language Models (see below).

Large Language Model (LLM)

LLMs are a type of AI that can understand and process large amounts of text data. LLMs are built on machine learning, specifically, a type of neural network called a transformer model. Transformer models can learn context, which is important for human language, and use a mathematical technique called self-attention to detect subtle ways that elements in a sequence relate to each other.

LLMs are pre-trained on vast amounts of data and can perform a variety of natural language processing (NLP) tasks (see below), including translation, speech recognition, automatic summary generation, responding to unpredictable queries, and analyzing large data sets of language.

Machine Learning

Machine Learning is a field of computer science that focuses on giving machines, as computing pioneer Arthur Samuel described it in 1959, “the ability to learn without being explicitly programmed.” It is a specific type of AI that characterizes how machines “learn” from existing data patterns to make inferences or new predictions. Data scientists use algorithms to build models that process and extract insights from a vast pool of data, which are then fed back into the machine to continuously improve the model.

Natural Language Processing

Natural Language Processing (NLP) is a machine’s ability to understand and interpret human language the way it is written or spoken. The objective of NLP is to make computers as intelligent as human beings at understanding language. NLP seeks to fill the gap between how humans communicate (i.e. through natural language) and what computers understand (i.e. machine language).

Precision vs. Recall

Precision and Recall are two common metrics for evaluating predictive AI/ML models such as SmartAssistant.

- Precision is a metric that measures the accuracy of positive predictions. It is calculated as the ratio of true positive predictions to the total predicted positives.
- Recall is a metric that measures the model's ability to correctly identify all actual positive instances. It is calculated as the ratio of true positive predictions to the total actual positives.

We evaluate the success of our models based on the combination of these metrics.

Supervised Learning

Supervised learning is a type of machine learning where the AI/ML model is trained on labeled data from a training data set. The opposite of this is unsupervised learning. At SmartRecruiters, all Deep Learning models (e.g. for SmartAssistant) are retrained using Supervised Learning. This allows our Data Science team to ensure that the act of retraining models does not lead to any unforeseen consequences, such as the introduction of bias into model results.

How SmartRecruiters mitigates bias

Every piece of candidate data used to train or test our models is anonymized. This means that no personal information (PII) is being used in the algorithm's training, as it is removed prior to use. Data is aggregated across applications across all clients in the model used to calculate the Match Score, so nothing can be directly attributed back to any one client or candidate.

The primary reason that we anonymize our input data is to reduce the risk of subjective human bias polluting our model results. For example, our SmartAssistant product sanitizes employer and university names to remove the possibility that humans are biased for/against certain organizations and institutions. This allows our product to truly be a skills-based hiring tool and ensures our model is unbiased.

Another reason why we anonymize our input data is to reduce the risk of gender and racial bias. A candidate's name provides a major indicator of their gender and/or their ethnic background. Any Machine Learning model that retains data connected to their experience or education is certainly introducing bias into their model, and is exactly why we remove it before the data touches our solution. We also convert Job Titles into non-gendered standardized versions before they are used in our models. For example, Waiter and Waitress would be treated identically for analysis.

SmartAssistant is subjected to an annual bias audit as required by New York City Law 144 and has demonstrated no bias by gender or ethnic lines each year.

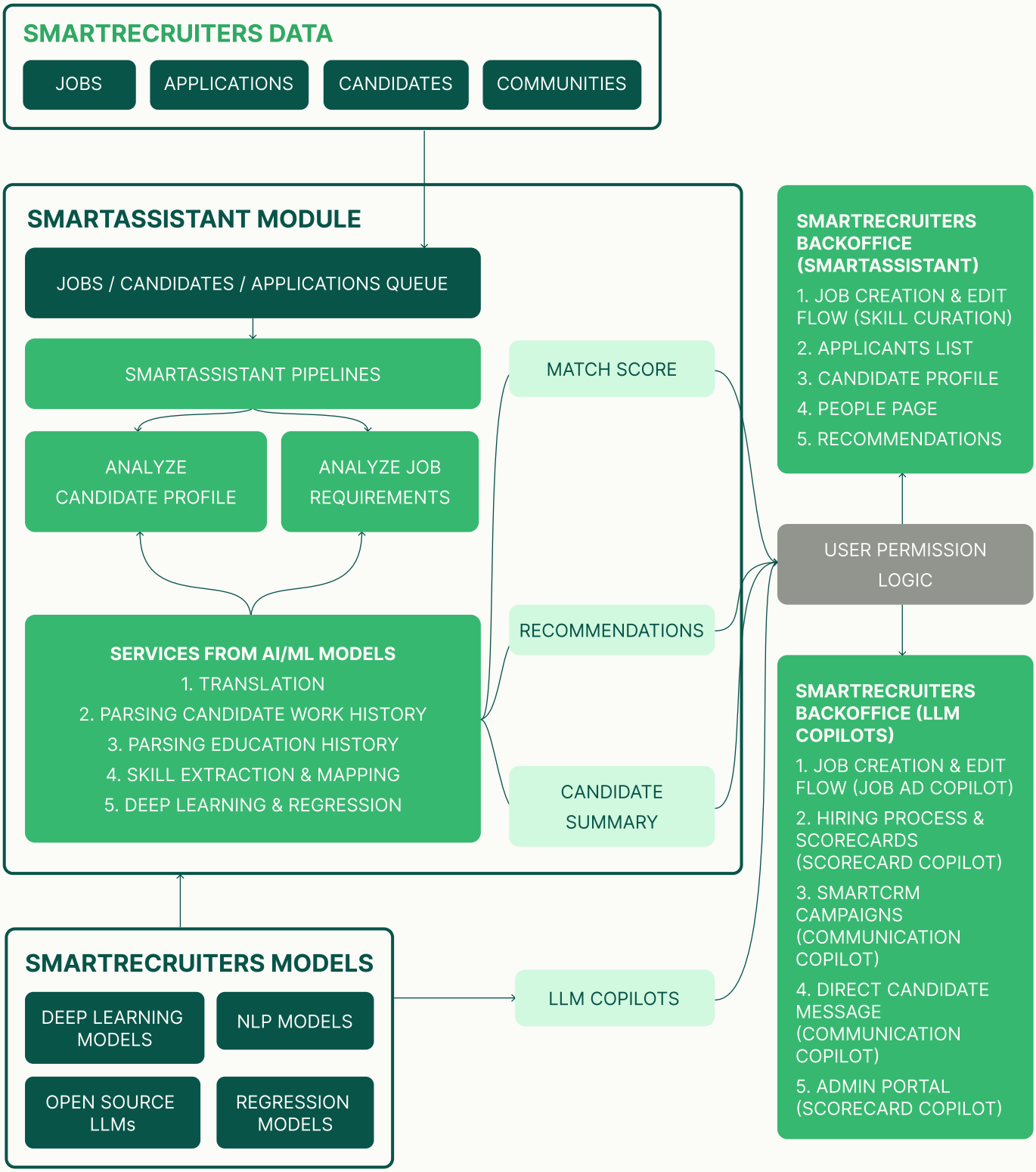
Design decisions to prevent bias

We made an important decision not to use a black-box approach to machine learning to produce automated decisions. While this concept lends itself well to domains such as medical image processing or autopilot systems where a highly biased algorithm is desired, it would result in negative outcomes if applied to hiring decisions.

This is why SmartAssistant, as the name suggests, serves to assist recruiters by restacking, highlighting and helping to prioritize the order candidates are reviewed and is not designed to make decisions in an automated way.

We do not develop custom AIs for each of our customers individually in order to avoid training algorithms on small, and inherently biased, data sets. Instead, we've trained our algorithms on a very large data set containing job descriptions and profiles gathered over many years.

SmartRecruiters AI environment



SmartRecruiters

See SmartRecruiters in action

About SmartRecruiters

SmartRecruiters powers Superhuman Hiring™ by freeing talent acquisition teams from legacy applicant tracking software, and equipping them with next-gen AI functionality. SmartRecruiters' platform serves as the hiring operating system for 4,000 customers, including Bosch, LinkedIn, and Visa. Companies with business-critical hiring needs turn to SmartRecruiters for best-of-breed functionality, world-class support, and a robust ecosystem of third-party applications and service providers.

For more information, visit www.smartrecruiters.com/winston/

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