Reimagine Candidate Selection

Transform Hiring Through Predictive Analytics
Predictive analytics are the new norm.
Deploy an Algorithmic Assessment to Improve Hiring Outcomes

In today’s data-driven world, predictive analytics are the new norm. Online vendors—from Amazon to Spotify—use your individual browsing history to suggest products or services that you will likely buy. Search engines such as Google provide query suggestions in real time as you begin to type. And insurance companies combine your credit information with your driving history and biographical data to quote you an auto rate. Data is everywhere, and technology is enabling companies to leverage that information to achieve greater business outcomes.

Now is HR’s time to apply and maximize this technology. Advances in statistical modeling, cloud computing, and machine learning have together created a new opportunity for businesses to incorporate predictive analytics into HR practices. By making the most of its employee and candidate data, a company can optimize its most important asset: its human capital.

What Is Machine Learning?

Machine learning is the automated version of human learning. It evolves from the study of pattern recognition: machine learning mimics how our brains automatically recognize patterns based on previous experience.

What Are Algorithmic Assessments?

An algorithmic assessment applies statistical models to candidate information to predict the likelihood of certain outcomes. By applying machine learning within the algorithm development process, predictive features can be discovered through a process that replicates what recruiters and hiring managers try to do when they look at a candidate’s background. A statistical engine that uses machine learning can complete this review at a level of depth that humans can’t match because people:

• Lack the necessary information (i.e., all background and outcome data),
• Cannot compute that data quickly and accurately, and
• Are limited in the number of predictive features they can consider at any given time.
Our recruiters are stretched; are we using their time efficiently?

How can we reduce time to hire?

Algorithmic Assessment in Candidate Selection: An Inflection Point

High-value business questions, such as those on the left, are on the minds of HR and business leaders alike, often forcing them into an inherent dilemma: hiring fast or hiring right. Quickly acquiring and retaining great talent can make all the competitive difference in today’s global economy, especially when extended vacancies and bad hires are so costly.

Unsurprisingly, organizations invest a lot of resources to identify the best candidates as efficiently as possible—resources both human and not. As organizations strive to meet critical business needs, the balance between human judgment and data-backed decision continues to shift. To better understand how data informs HR decisions today—and where predictive analysis will come into play in the months and years to come—let’s review the evolution of candidate selection.

“...the balance between human judgment and data-backed decision continues to shift.”
A Brief History of Candidate Selection

Stage 1: Complete Reliance on Human Judgment
When organizations first created dedicated HR functions, the overwhelming opinion was that human experience would always be the best gauge in determining a candidate’s competencies and potential for success at an organization.

Stage 2: The Rise of Psychometric Assessments
When industrial-organizational (IO) psychologists suggested there could be a way to test a candidate’s competencies and success factors without the consultation of an (experienced) recruiter, the HR world was skeptical. How could a questionnaire (in crude terms) reflect an applicant’s expected job performance? How could an assessment gauge a candidate’s expected success at an organization without knowing anything about the specifics of the organization?

Over time, the efficacy and importance of these assessments have been validated to statistically significant levels in countless studies. Today, in most talent acquisition practices, recruiters seldom hire a candidate without first administering some sort of psychometric assessment.
Stage 3: Emerging Algorithmic Assessment Techniques

We are now at a similar inflection point when considering algorithm assessment as an integral component of the candidate selection process.

Other fields have adopted big data analytics to predict human behavior (e.g., consumer behavior, stock-buying or -selling behavior, IT risk behavior), but HR—and in particular Talent Acquisition—is just realizing the opportunity to leverage such predictive tools.

Traditional assessment tools—such as psychometric assessments—tie candidate competencies, abilities, behavioral styles, and preferences to critical business outcomes. Now psychometric assessments can be complemented by cutting-edge algorithmic assessments, where advanced machine learning and semantic tools are used to predict business outcomes, using application data alone. This dual-pronged approach provides companies with superior efficacy and versatility when it comes to improving post-hire outcomes.
A machine learning application can find patterns on résumés not possible with hypothesis-driven approaches. The engine analyzes every variable, feature, word, and phrase and evaluates them for potential predictive power. As a result, machine learning algorithms remove the biases that are inherent with human decision making and focus on verified data to increase the likelihood to hire the best-fit candidates. This is done in two ways:

**Maximize the use of predictive information instead of using discrete filters.**

Often, based on previous experience and cognitive biases, hiring managers and recruiters break down a desired profile into specific key words and filters (e.g., tenure, educational qualifications). This process reduces the likelihood of finding the best candidates and potentially increases the likelihood of discarding the best candidates from the pipeline.

Instead of establishing filters to rule out potential hires, use machine learning algorithms that determine a set of independent predictive features from candidate résumés to score each candidate.

**Continuously update predictive features based on learning from outcomes.**

A static screening tool never learns from actual outcomes—individual or organizational—and remains ineffective. Machine learning algorithms, however, can be trained to pick up cues from outcome data and constantly update the predictive features (and therefore the underlying scoring model). This brings in a level of intelligence and accuracy that is unmatched by any tool or human processes.
The risk of using algorithmic assessments incorrectly is high: as Peter Cappelli warns in a recent HBR article,

““If HR is to set the agenda on people management, it must either staff up to handle [data] analyses itself or partner with people...who can do the work.””¹

So before considering any machine learning solution, please carefully consider the following risks and ensure the solution has addressed these issues:

**Unknowingly Perpetuating Bias**

If you employ an automated selection approach that closely replicates human decision making, you are likely just perpetuating existing human bias. For example, if an applicant’s zip code correlates with candidates who fail to receive a job offer, your finding might seem objective. However, if the zip code is predictive because it primarily comprises low-income houses with poorer, less educated families, which are predominantly minorities, you are either:

- Replicating preexisting intentional discrimination, or
- Replicating a prior process that unintentionally discriminated against minorities and resulted in an adverse impact

Attempting to “automate” processes without taking it a step deeper can be dangerous. Examples of going that extra step include:

- Using historical data to back-test for adverse impact, and
- Predicting who actually does the job well, not just who gets the job.

**Moving Away from Job Relatedness**

As organizations increasingly adopt “gamification” in the workplace, companies need to be careful about whether they are “gamifying” work elements or literally just having candidates play games. If the latter, then there is no job relatedness. Although such an application may benefit post-hire employee engagement, it has little value as a pre-hire selection tool.

Overfitting Data (or Poor Statistical Modeling)

Applied to analytics, the phrase “garbage in, garbage out” is especially true. If your data set is too small, then there is no statistically valid way to gain any insight: all outcomes are likely driven by chance.

For example, if you have 200 data points and all that data is used to both build and test the model, then the model becomes very specific to that particular set. This is called “overfitting,” and the result is a model that does not work very well on additional data.

The best companies hold out a subset of the data (e.g., 20% of total sample). Once they’ve optimized their models, they test it blindly on the held-out data subset. This methodology proves the model’s validity on not only the tested data set but also any future analysis on additional data. In short, extraordinary claims require extraordinary proof (like blinded backtesting).

Addressing Adverse Impact

Unlike manual processes, the algorithmic assessment is 100% objective and insulated from potential conscious or subconscious biases. Any potential for adverse impact can be vetted and, if necessary, corrected prior to a deployment for each client specifically through the backtesting methodology.

Through historical analysis, algorithmic assessment can demonstrate to statistically significant levels that recommended candidates do not have a lower proportion of any protected class, such as females, minorities, veterans, and disabled persons.

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CEB Sunstone Analytics unlocks the power of data you already hold.
CEB Sunstone Analytics: Using Machine Learning to Intelligently Select Applicants in the Hiring Pipeline

CEB Sunstone Analytics offers résumé-based predictive analytics to provide HR leaders with company-specific recruiting insights and superior selection decision criteria.

The résumé analytics technology quickly identifies top candidates based on key features and phrases associated with high performers within a specific company and role.

This solution also ensures you avoid all of the pitfalls of a new technology, and brings you all the value of predictive analytics and algorithmic assessments. In a nutshell, this solution is crafted to ensure no adverse impact, uses candidate application data that is job related, is proven before deployment, and removes any human bias in résumé screening.

Cutting-Edge Technology

We use advanced machine learning techniques to create sophisticated algorithms that predict which job applications are most likely to lead to success in the role.

Customized for You—Always

Because every organization is different, nothing is off the shelf. Every algorithm is customized for each client, role, and desired outcome.

Improved Outcomes and Efficiency

Our algorithms do not just make volume selection fast; they power your company by improving attrition and performance outcomes.

No Hassle, No Disruption.

Easy for you and your applicants, screening is instantaneous and uses only standard job application data.

For more information on CEB Sunstone Analytics, visit cebglobal.com/sunstone-analytics
About CEB

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