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Assessing Performance

How to Hire with Algorithms

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Choosing the right person for a job can be challenging. The sheer number of resumes can be overwhelming. But even for organizations patient enough to review each application, poor choices can arise from psychological biases ranging from racial discrimination to narrow bracketing (in which people overemphasize subsets — rather than the universe — of choices, for example, choosing the best candidate interviewed that day rather than the best candidate interviewed over the course of the search). For tech-savvy

organizations, recent applications of machine learning coupled with increased access to data raise the possibility of improving hiring decisions with the help of algorithms.

To see the close relationship between algorithms and hiring, consider the simple fact that hiring is essentially a prediction problem. When a manager reads through resumes of job applicants, she is implicitly trying to predict which applicants will perform well in the job and which won't. Sales organizations are trying to predict which sales associates will successfully close deals. School districts are trying to predict which teachers will bring a classroom to life. Police departments are trying to predict which officers will keep a neighborhood safe.

Statistical algorithms are built for prediction problems. They can be helpful in improving human decision-making in contexts ranging from judges gauging who will skip bail to health inspectors identifying restaurants with health code violations. Similarly, algorithms have the potential to improve hiring and promotion decisions in areas ranging from sales teams to teachers to police.

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We explored that potential in a recent study on selecting teachers and policemen. We used machine learning algorithms to transform data about teacher and police characteristics – for example, educational background, surveys, and test performance – into predictions about their likely performance in the future. Our results demonstrate that students and communities alike could benefit from a more data-driven selection process. Algorithms can help with some of the nation's most challenging personnel issues. For example, the data suggest that police departments can predict, at the time of hire, which officers are most likely to be involved in a shooting or accused of abuse.

Of course such an exercise creates plenty of controversy in organizations entrenched in existing practices. Skeptics will rightly want to know more about the sort of data that are used. Our point is not that any one algorithm will yield the perfect answer and replace all human interaction in the hiring process. Our point is much simpler – algorithms are an important decision aid for managers looking to make hiring and promotion decisions. Algorithms have strengths and limitations, and need to be managed.

The question is not whether to use algorithms for hiring, but how to get the most out of them. That is, what sorts of decision rules should be used to select the candidate most likely to succeed? For organizations interested in the promise of data, we offer five principles for using statistical algorithms to aid the personnel selection process:

1. **Pick the right performance metric**. Algorithms are ruthless in pursuing the objective you give them – they will optimize for that, and nothing else. This means you need to be very clear about how you define success. Often the right metric will be a combination of characteristics. For example, a manager hiring a salesperson may wish to balance their likelihood of turnover, projected close rate, and impact on relationships with clients.

2. **Collect the right variables**. Organizations and applicants alike often use heuristics to determine what characteristics of a resume matter most (College GPA? Previous Job Title? Other Interests?). Effective algorithms require human intuition, experimentation, and iteration to decide which characteristics to measure about an applicant to help predict the performance metric you care about.

3. **Gather many data points**. After each person is hired, track his performance and keep records of his application data. Algorithms will use these data points to help guide future hiring. But algorithms are also data hungry: the more data points you keep,

the better the prediction will be. There is a competitive advantage to scale here. Companies with more employees can learn more.

4. **Compare apples to apples**. A common mistake when measuring previous performance is to overlook differences in the difficulty of tasks assigned to different employees. For example, if the best salesperson took on the hardest clients, they might have the lowest closing rates. The right performance metric will need to adjust for the underlying difficulty of the task.

5. **Anticipate incentives**. Applicants or employees may be incentivized to "game" the metric by acting in ways that superficially increase the score, but do not accurately reflect their talent. Salespeople incentivized to close deals at any costs may score well on a performance metric, but provide little of value to the company. Anticipating this will allow you to create sufficiently broad metrics, and to take strategic behavior into account.

While there are limits to statistical algorithms, there are also limitations to human judgment. Within larger organizations, it's hard to imagine a world in which using both human and machine intelligence for hiring is not the preferred route. In other words, when trying to choose the right person for the job, it's best to draw on the strengths of both.

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