How Tech Employers Can Use Technology To Recruit More Diverse Candidates

By Andrea Guendelman

With more than 700,000 unfilled IT jobs in the U.S., we might expect recruiters to cast a wider net for qualified candidates. Yet most large technology companies conduct their on-campus recruiting at a limited number of elite universities, creating fierce competition for these new grads and leaving many coding and engineering positions vacant.

Limiting the candidate pool also perpetuates a lack of diversity in the tech industry that's even more pronounced than in other sectors with few signs of improving. At Google, the number of blacks and Latinx hired for technology jobs has risen less than 0.5% since 2014, now comprising 2.8% and 5.3% of its IT workforce respectively. It's a similar story at Microsoft and Apple.

It is possible for tech companies to fill their job openings and create a workforce that better reflects their customers. But they need to take a new approach to recruitment.

Companies tend to blame their lack of diversity on a shortage of minorities and women in the talent pipeline. And in some ways, they're right. Only 9% of graduates from the nation's top computer science programs are from underrepresented minority groups. But research shows attendance at the preferred schools has been a poor predictor of job performance. And there are many qualified minority candidates attending schools with lesser reputations. The challenge is to find them.

A major hurdle is that the recruitment processes at most big tech companies were put in place by graduates of prestigious schools, and so contain inherent biases against minorities, women, and those who attended lesser universities. Another is that minority candidates from lower-tier schools often lack the confidence of white male candidates who've attended elite universities. So even if these candidates are offered an interview, they are more likely to be rejected in subsequent rounds of the process.

"There are subtle biases that make you think that some person is not what you're looking for, even when they are," says Janice Cuny, director of the Computer Education program at the National Science Foundation.

The job to be done

To help major technology firms find the talent they need within a more diverse population, we identify qualified candidates from underrepresented groups and match them to the appropriate companies. Our approach is designed to focus on ability rather than pedigree, which is why we:

- Use technology to analyze job openings to gain greater insight into the skills and experience the employer is seeking
- Use technology to categorize and score minority candidates' hard and soft skills
- Prepare candidates during a six-week bootcamp to perform well during the hiring process
- Present those candidates' credentials to employers in a way that avoids bias

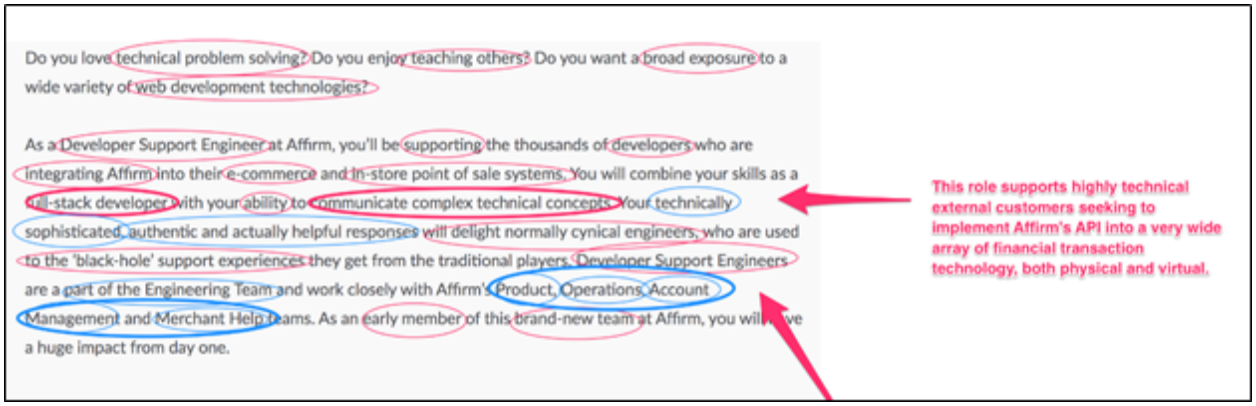
Solution in Detail

1. Understanding job openings

We use natural language processing tools to extract keywords from job descriptions to read between the lines of what companies are really looking for. For example, in Exhibit 1, although the job description does not directly say so, we can deduce that this is a developer-evangelist role supporting multiple teams in a post-production environment.

From that, we can deduce that the ideal candidate should have experience later in the systems development lifecycle (SDLC), such as in a release-engineering role. They must also have the communication skills to respond to feedback from multiple customers. The requirement to become familiar with the company's APIs will likely require them to be fluent in Javascript, and Java and Python would be nice-to-have skills. Other nice-to-haves we can infer include experience in testing, network programming, and technical writing.

Exhibit 1

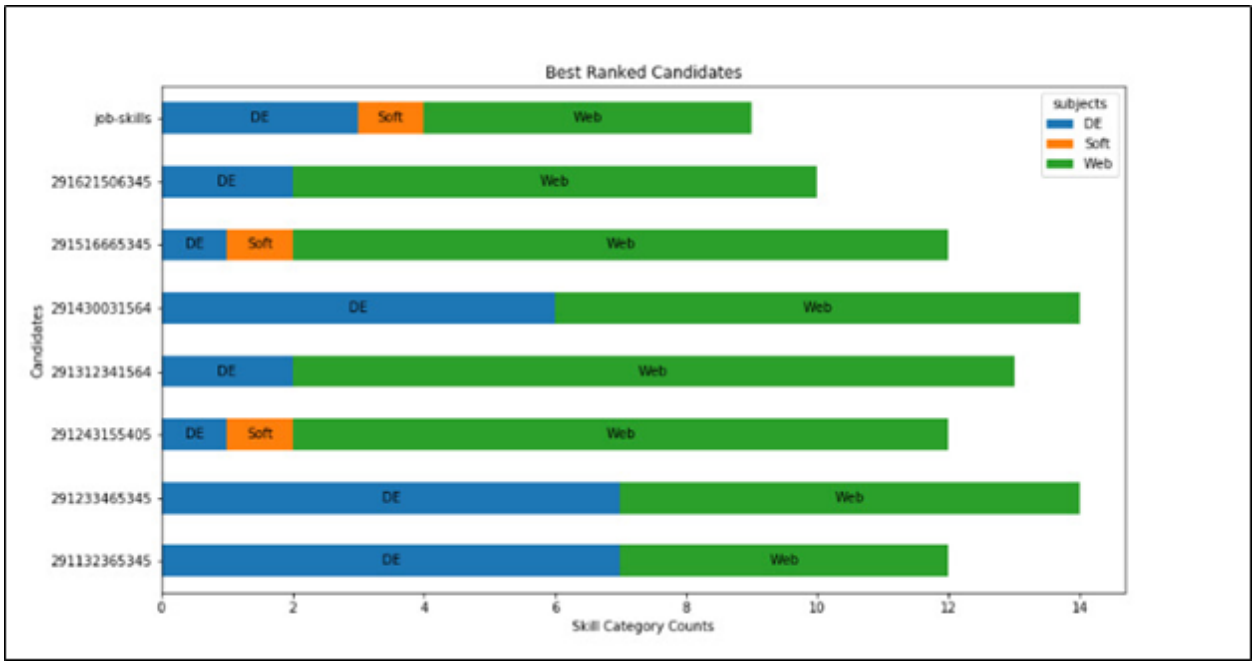


2. Ranking candidates' skills

Also using NLP, we extract candidates' hard skills from their resumes. We derive insights about a candidate's soft skills by recording and analyzing their communication patterns during group interactions and mock interviews. We use NLP to look for keywords [LC1] associated with soft skills such

as leadership, team-building, and confidence. We quantify these characteristics for candidates as in Exhibit 2.

Exhibit 2



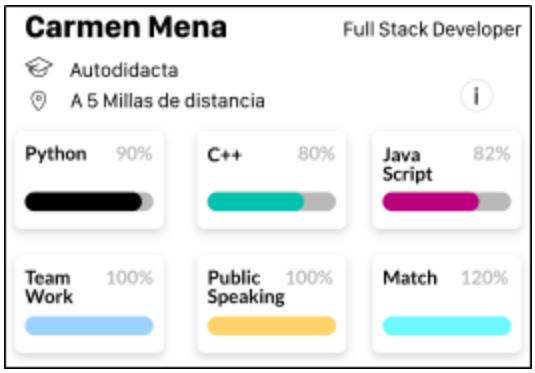
3. Correlating characteristics that matter

Our next step is to compare the candidates' hard and soft skills to the job requirements to determine the best fit and present them to employers without revealing their names or other personal information. All our candidates are from underrepresented groups and companies seek our services for that reason. But it's still critical that we mask aspects of their identities for as long as possible during the selection process because most bias is unconscious. Information that we exclude from the resumes we present to employers include:

- **School names.** A candidate from an expensive, prestigious school such as MIT or Stanford is more likely to be considered a good fit by a recruiter at a major tech firm.
- **Sports.** A candidate that says they participate in skiing, golf and crew are more likely to resonate with screeners at a major firm than basketball or football.
- **Words that correlate with gender**, such as "support" and "collaboration" (which are considered feminine qualities), or "people" and "logic" (masculine).
- **Location.** Where a candidate lives can elicit geographic bias and it's typically not important because most candidates are willing to relocate for the right job.

To prevent our algorithms from perpetuating an existing biased process, we don't compare candidates with a set of previously "successful" candidates. We only compare them with the other current candidates.

Exhibit 3



4. Training to fill the gaps

Before the first interview, we give every candidate six weeks of training. New computer science graduates, especially from lower-profile schools, often are not well-prepared for the rigor of the interviewing process. They frequently lack experience in hands-on coding and real-time problem-solving, both of which are commonly tested.

So, the training includes individual and group problem solving; hands-on coding exercises; technical topics such as space-and-time complexity analysis, networking, Linux, and multithreaded programming; and one-on-one mock interviews with senior software engineers. This process gives candidates the coaching, practice and confidence they need to put their best foot forward.

Tuhina Das, a recruiter at Airbnb says her company's screening processes were put in place by its software engineers many years ago. They were mostly graduates of universities with well-funded and resourced computer science curriculums, so those processes are consistent with those schools' programs.

Candidates from other schools are not always as well prepared for them. Das believes these students are often just as capable and motivated, but it takes more time and resources for recruiters to screen them for potential that isn't immediately visible. Programs such as Wallbreakers have been a valuable channel for Airbnb to find talent and achieve a more diverse intake.

Humu, a startup founded by three former Google employees that uses technology to nudge people towards better work habits, has found similar success with Wallbreakers. Humu already tries to remove bias from its recruitment process by screening engineering candidates with a coding test that's graded anonymously. Anyone who receives a certain score moves on to the next stage.

But Humu's recruiters were finding that minority candidates weren't performing as well on the test, an issue they didn't encounter with those referred by Wallbreakers because of their exposure to the types of coding interviews conducted by high tech companies during training. After interviewing 20 Wallbreakers candidates, Humu made two offers. One of those candidates, who demonstrated both strong soft and hard skills during the process, recently started.

"She was very interested in what we're doing and asked great questions about the company," says Katherine Bouskos, Humu's technical recruiter. "And she didn't seem thrown off by our coding challenge."

Keeping bias at bay

Today, 80% of the candidates we refer to companies receive a first interview. About 60% make it to a final interview and 42% receive job offers, compared with an average of 10% for minority applicants. Besides the placements at Airbnb and Humu, other recent successes include a female computer science graduate of Florida State University, originally from Ecuador, who was offered a position by Microsoft.

But without the proper preparation and presentation, these candidates will continue to be overshadowed by their more privileged counterparts. At any point in the recruitment process, a strong minority candidate can be overlooked or rejected because of bias. Most recruiters and managers appreciate the limitations of a homogenous workforce and the advantages of a more diverse one. Now technology can help them make it a reality.