Data-Driven Hiring in Radiology

Want to buy a used car? Craigslist makes it easy to find the make, model, and year you are looking for. But just finding the car is not enough—you need to know if it is a peach or a lemon. Unfortunately, you, the buyer, can't tell whether the used car is a peach or a lemon from an ad, while the seller knows its exact condition. This informational asymmetry can potentially lead to a breakdown of the used car market: because you, the buyer, are taking a risk when you buy a used car, you may be unwilling to pay the fair market value for a car that is in fact a peach, while the seller of that peach is unwilling to accept any amount less than the fair market value. The peach will not change hands; the used car market will be a market for lemons [1,2].

To get around this problem, a used car shopper can insist that a car of interest be checked by a mechanic or can go to a dealer and pay a premium for a "certified" used car. Mechanics or dealers who want to stay in business must take their reputations into account with every transaction (Yelp). The apparent permanence of a mechanic's garage or a dealer's showroom signals to a buyer that the car of interest must be a peach; there is no reason for a sham mechanic or a lemon dealer to own a costly building, as such an individual is likely to be out of business posthaste. The used car buyer can confidently pay a fair market value [2].

Informational asymmetries also affect the job market. Although finding potential new hires is easy, determining if they are peaches or lemons is hard. For their part, applicants will usually know which of the two they are. Confronted with this informational asymmetry, employers (like used car buyers) look for signals: "a degree from MIT, a previous job at Google, a recommendation from a friend or colleague" [3]. Highly talented applicants can obtain these credentials with comparative ease; their somewhat less talented peers may opt to direct their energies toward more readily attainable goals. The problem is that in practice, these traditional signals are not, by themselves, that reliable at predicting how well an applicant will perform once on the job.

Technology firms, led by Google and a gaggle of startups, have started to pay attention to this problem. Workforce scientists look at a much broader range of signals: "the sites where a person hangs out; the types of language, positive or negative, that he or she uses to describe technology of various kinds; self-reported skills on LinkedIn; the projects a person has worked on, and for how long," alongside the more traditional ones: "where he or she went to school, in what major, and how that school was ranked that year by U.S. News & World Report" [3]. By correlating each of these signals to job performance metrics for existing employees, the scientists can create a model to predict how an applicant with given attributes will perform when hired.

So far, this intensive, data-driven approach to hiring has been used only for select classes of workers, such as software developers [3]. However, it is easy to imagine how predictive modeling could one day inform radiology hiring. Signals used to build a model might include not just where an applicant did a residency and the strength of the applicant's recommendations but also how many cases the applicant dictated during residency, weighted by the difficulty of those cases as reflected by relative value units (or more sophisticated measures when they become available) and how the applicant performed on any visual cognition, emotional intelligence, or working memory tests administered during an interview. The job performance data could include the number of relative value units per full-time equivalent and novel quality metrics as they come online.

Some human resources executives have yet to buy into this new hiring paradigm. There is not as of yet a body of outcome studies to support predictive modeling. Also, the models do not incorporate qualities that can't be measured, things like "gut instinct" and "charisma." Still, it seems likely that radiology hiring practices will soon be in some part data driven.

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