New tool can help job searchers better position themselves in market

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With the decline of manufacturing, the U.S. economy has increasingly shifted toward knowledge-based production: industries focused on implementing new ideas surrounding technology, product design,

machine learning, and other areas as their source of revenue. In this new economy, it can be challenging to evaluate the skillset of an individual, as combinations of various skills are important. For example, a software developer with design skills may be more valuable than a software developer with Russian translation skills.

A novel method, developed by an economist at the Tepper School of Business at Carnegie Mellon University, has been created to evaluate a worker's skillset and determine its impact on wages. The model appears in the scientific journal, *Proceedings of the National Academy of Sciences (PNAS)*.

"The interactions between skills are represented by a skill network. Skills on the network are connected if there are workers in the labor market who have both," said Katharine Anderson, assistant professor of economics and entrepreneurship, who developed the model. "The position of a worker's skills on the network indicates the type of worker she is, how diverse her skills are, and how well they work in combination."

Anderson used an online freelance labor market and found that workers with diverse skills tend to fall into two different groups: 'jacks of all trades,' who use skills independently and have more job options, or 'synergistic workers,' who use their skills in effective combinations. Anderson found workers with diverse skills tend to earn higher wages, and those who use their diverse skills synergistically earn the highest wages of all.

"These findings are particularly important in online labor markets because employers are using them more frequently, and the candidates they see are selected algorithmically," said Anderson. "Workers need to carefully craft their profiles to attract employers."

The research introduces a method that can characterize a worker's combination of skills (e.g., how diverse they are, how much they are in demand, and how well they work together) and can help employers with hiring decisions as well as workers trying to position themselves in the labor market. The findings suggest that workers who can use their diverse skills synergistically to fill a hole in the labor market will likely earn the highest wages. By providing a better way to characterize worker skill sets, this method could potentially improve online search algorithms, and help workers to better position themselves in the market.

"This model shows there is an opportunity to improve the online labor market search algorithms and better match employers and employees," said Anderson. "Using this information, we can help job searchers better position themselves in the market, match employers to top talent, and inform worker training decisions."

More information: Katharine A. Anderson, Skill networks and measures of complex human capital, *Proceedings of the National Academy of Sciences* (2017). DOI: 10.1073/pnas.1706597114

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