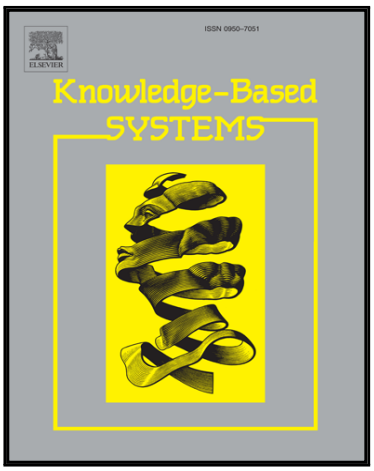

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Evaluating recommendation and search in the labor market

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Abstract

This study evaluates the most popular recommender system algorithms for use on both sides of the labor market: job recommendation and job seeker recommendation. Recent research shows the drawbacks of focusing solely on predictive power when evaluating recommender systems, which become especially prominent in job- and job seeker recommendation, where aspects such as reciprocity and item spread are two other vital performance metrics for the quality of recommendations. Besides evaluating using these extra metrics, we compare recommendation with search using free text search engines. We measure what is gained, and what is lost when consuming items (jobs and job seekers) retrieved using search versus items presented via a recommender system. Based on insights in date recommendation literature, we propose changes to rating matrix construction aimed at mitigating the drawbacks of recommendation in the labor market. Our results, obtained from extensive experimentation on three datasets gathered from the Flemish public employment services, show that popular recommender algorithms perform significantly worse than user search in terms of reciprocity. Furthermore, we show that by swapping the rating matrices between two sides of a reciprocal recommender context, we can outperform user search in terms of reciprocity with limited trade off in predictive power. The insights from this research can help actors in the labor market to better understand the positioning of recommendation versus search, and to provide better job recommendations and job seeker recommendations.

Keywords: recommender systems, reciprocal recommendation, job recommendation, job