

Comparing Apples and Oranges: Fairness and Diversity in Ranking

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Abstract

Algorithmic rankers take a collection of candidates as input and produce a ranking (permutation) of the candidates as output. The simplest kind of ranker is *score-based*; it computes a score of each candidate independently and returns the candidates in score order. Another common kind of ranker is *learning-to-rank*, where supervised learning is used to predict the ranking of unseen candidates. For both kinds of rankers, we may output the entire permutation or only the highest scoring k candidates, the top- k . Set selection is a special case of ranking that ignores the relative order among the top- k .

In the past few years, there has been much work on incorporating fairness and diversity requirements into algorithmic rankers, with contributions coming from the data management, algorithms, information retrieval, and recommender systems communities. In my talk I will offer a broad perspective that connects formalizations and algorithmic approaches across subfields, grounding them in a common narrative around the value frameworks that motivate specific fairness- and diversity-enhancing interventions. I will discuss some recent and ongoing work, and will outline future research directions where the data management community is well-positioned to make lasting impact, especially if we attack these problems with our rich theory-meets-systems toolkit.

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Short Bio. Julia Stoyanovich is an Assistant Professor in the Department of Computer Science and Engineering at the Tandon School of Engineering, and the Center for Data Science. She is a recipient of an NSF CAREER award and of an NSF/CRA CI Fellowship. Julia's research focuses on responsible data management and analysis practices: on operationalizing fairness, diversity, transparency, and data protection in all stages of the data acquisition and processing lifecycle. She established the Data, Responsibly consortium, and serves on the New York City Automated Decision Systems Task Force (by appointment by Mayor de Blasio). In addition to data ethics, Julia works on management and analysis of preference data, and on querying large evolving graphs. She holds M.S. and Ph.D. degrees in Computer Science from Columbia University, and a B.S. in Computer Science and in Mathematics and Statistics from the University of Massachusetts at Amherst.



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