Recommender Systems Research

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Abstract

We outline the history of recommender systems from their roots in information retrieval and filtering to their role in today’s Internet economy. Recommender systems attempt to reduce information overload and retain customers by selecting a subset of items from a universal set based on user preferences. Research in recommender systems lies at the intersection of several areas of computer science, such as artificial intelligence and human-computer interaction, and has progressed to an important research area of its own. It is important to note that recommendations are not delivered within a vacuum, but rather cast within an informal community of users and social context. Ultimately all recommender systems make connections among people. This observation is under-emphasized in the recommender systems literature. Thus, we pay particular attention to the inherently social aspect of recommender systems and the connections among users that they foster. This approach represents a departure from the traditional content-based filtering versus collaborative design perspective. As we show, recommender systems connect people either directly as a result of explicit user modeling or indirectly through the discovery of relationships implicit in extant data. Thus, we characterize recommender systems by how they model users to bring people together: explicitly or implicitly. Such user modeling as well as a connection-centric viewpoint raise broadening and social issues such as evaluation, targeting, and privacy and trust which we also briefly address. Lastly, we introduce shilling, the newest issue facing recommender system researchers. A shilling attack on a recommender system involves inundating the system with data intended to coerce it to artificially recommend the perpetrator’s products more often than those of a competitor.

Saverio Perugini is an Assistant Professor in the Department of Computer Science at the University of Dayton. His research and teaching interests include interactive information retrieval, intelligent user interfaces, data mining, and web technologies.