

MISQ Archivist

Large Scale Network Analysis for Online Social Brand Advertising

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Abstract

This paper proposes an audience selection framework for online brand advertising based on user activities on social media platforms. It is one of the first studies to our knowledge that develops and analyzes implicit brand–brand networks for online brand advertising. This paper makes several contributions. We first extract and analyze implicit weighted brand–brand networks, representing interactions among users and brands, from a large dataset. We examine network properties and community structures and propose a framework combining text and network analyses to find target audiences. As a part of this framework, we develop a hierarchical community detection algorithm to identify a set of brands that are closely related to a specific brand. This latter brand is referred to as the “focal brand.” We also develop a global ranking algorithm to calculate brand influence and select influential brands from this set of closely related brands. This is then combined with sentiment analysis to identify target users from these selected brands. To process large-scale datasets and networks, we implement several MapReduce-based algorithms. Finally, we design a novel evaluation technique to test the effectiveness of our targeting framework. Experiments conducted with Facebook data show that our framework provides significant performance improvements in identifying target audiences for focal brands.

Keywords: Online advertising, brand–brand networks, community detection, audience selection, sentiment analysis