

Product Aspect Ranking and Its Applications

ABSTRACT:

Numerous consumer reviews of products are now available on the Internet. Consumer reviews contain rich and valuable knowledge for both firms and users. However, the reviews are often disorganized, leading to difficulties in information navigation and knowledge acquisition. This article proposes a product aspect ranking framework, which automatically identifies the important aspects of products from online consumer reviews, aiming at improving the usability of the numerous reviews. The important product aspects are identified based on two observations: 1) the important aspects are usually commented on by a large number of consumers and 2) consumer opinions on the important aspects greatly influence their overall opinions on the product. In particular, given the consumer reviews of a product, we first identify product aspects by a shallow dependency parser and determine consumer opinions on these aspects via a sentiment classifier. We then develop a probabilistic aspect ranking algorithm to infer the importance of aspects by simultaneously considering aspect frequency and the influence of consumer opinions given to each aspect over their overall opinions. The experimental results on a review corpus of 21 popular products in eight domains demonstrate the effectiveness of the proposed approach. Moreover, we apply product aspect ranking to two real-world applications, i.e., document-level sentiment classification and extractive review summarization, and achieve significant performance improvements, which demonstrate the capacity of product aspect ranking in facilitating real-world applications.

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