First Demonstration of the Intelligent Reviewer’s Assistant

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ABSTRACT
User opinions and reviews are an important part of the modern web and all major e-commerce sites typically provide their users with the ability to provide and access customer reviews across their product catalog. The importance of reviews has driven the need to improve the review quality by providing interactive support for the reviewer and we will demonstrate the first version of an Intelligent Reviewer’s Assistant for this purpose. Our browser plugin is designed to work with major sites like Amazon and to provide users with suggestions as they write their reviews. In particular, these suggestions take the form of topics (e.g. product features) that a reviewer may wish to write about and the suggestions automatically adapt as the user writes their review.

ACM Classification Keywords
H.5.2. Information Interfaces and Presentation: User Interfaces

INTRODUCTION
Today millions of users contribute their opinions of products and services on sites like TripAdvisor, Hotels.com, Amazon, IMDB, and countless more. The growing importance of this type of user-generated content has highlighted a number of interesting research challenges. First and foremost, considerable research attention has recently been paid to better understanding the quality and fairness of user-generated reviews.

For our Intelligent Reviewer’s Assistant, we adopted a very different approach. Inspired by the GhostWriter system [1, 2], we propose to help users to write more meaningful and insightful reviews in the first place. Specifically, we have developed our system to work with sites like TripAdvisor and Amazon and to make suggestions to users during the writing process. The suggestions take the form of noun words that are chosen to highlight key features/topics related to the product or service that the user is writing about, and which have been extracted from other related reviews. As they write their review these suggestions change in response to what they write. For example, in reviewing a Nikon D90 SLR camera on Amazon, initial suggestions to the user might encourage them to discuss the price of the camera or its resolution; and via hovering over the suggestions, the user can always see what other users have written about these features if they wish. Moreover, as the review becomes more complete, these suggestions will change. Features that have already been covered will fall away and new, possible more niche features, will be suggested. For example, the reviewer might be encouraged to discuss the camera’s battery life or the weight of the body or even its shutter speed.

Of course these suggestions are meant as an optional guidance. At all times it is up to the user whether they choose to write about particular suggestions but because they are available our hope is that some users will benefit some of the time and that this will lead, in due course, to a greater number of high quality, helpful reviews. An example screenshot of the Intelligent Reviewer’s Assistant is presented in Figure 1. Briefly it shows the Intelligent Reviewer’s Assistant’s suggestions box with a number of suggested topics related to the review that the user has started to write; in this case it is a review about the movie The Tourist starring Angelina Jolie and Johnny Depp. As indicated, if the user mouses over one of these suggestions then they see a short list of review fragments from related reviews that have touched on this topic.

SYSTEM OUTLINE
The Intelligent Reviewer’s Assistant system architecture comprises four base components:

1. Filtering Select good quality User Generated Content (UGC) as knowledge base. In the current version of the demo, the first hundred reviews are scraped from Amazon for that product.

2. Mapping Assuming good quality UGC is identified, the similarity between the current writing of the user (in progress) and similar texts in the knowledge base is computed to identify relevant UGC. In the current version of the demo, Jaccard similarity after Stop-Word-Removal and Stemming is applied to pick the 50 reviews that are most similar to the current writings.

3. Extracting Extracting features from relevant and good quality UGC is the basis for generating and ranking suggestions. For the current version of the demo, noun words are extracted as topic descriptors and corresponding noun phrases from UGCs are linked with those noun words.

4. Presenting In the current version of the demo, users see a list of Top-10 noun words in the suggestion box. Hovering over the suggestions will show noun phrases containing those nouns.
RELATED WORK

The GhostWriter system was first proposed by Bridge et al. [1] and Healy and Bridge [2] as an approach to guide users in the construction of short snippets of user generated content. Originally, it was applied to the writing of classified adverts for products users wished to sell/exchange. Subsequently, the GhostWriter researchers turned their attention to helping users produce review content on Amazon. Currently GhostWriter extracts noun phrases from past product reviews (cases), and suggests these phrases to the reviewer/user as fragments to be copied directly into an evolving review.

Our Reviewer’s Assistant differs from the Ghostwriter system in the following ways:

1. We suggest nouns instead of noun phrases, thus users are not guided towards a particular sentiment contained in the phrase. Rather, noun words guide the user towards covering topics that other users have covered before or topics that were covered for other products.

2. We use association rule mining instead of word frequencies, i.e. we try to follow the user’s intent while he is writing up his review. Preliminary expert assessment seems to indicate that the suggestions generated by association rule mining provide better guidance for quality reviews.

TECHNICAL ASPECTS

The Reviewer’s Assistant has been developed as a browser plugin so that it can integrate directly with review systems across a wide variety of web sites. The current version of the demo works with Amazon but it will work in a similar manner with sites such as BestBuy, Hotels.com, TripAdvisor etc. As mentioned previously the Reviewer’s Assistant takes the form of an additional recommendation module that appears on the review-creation pages of Amazon as shown in Figure 1. Quite simply the module presents an updating list of topic recommendations to the user as they write their review. These suggestions are extracted from the texts of related reviews in real-time and based on the review content that the reviewer has provided so far. As such the suggestions adapt to the review as the reviewer writes it: as topics are covered, these suggestions fall away and are replaced with additional suggestions. The module is fully interactive and the user can, for example, hover over a suggestion to see additional information, such as the review fragments from related reviews that discuss the topic.

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REFERENCES
