Research Opportunities for Argumentation in Social Networks[*]

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1 Proposal

Argumentation Theory (concretely Argumentation Schemes Theory [1]) can provide valuable assistance to formalize and structure on-line discussions and user opinions. Argumentation schemes are stereotyped patterns of human reasoning that can improve the user's understanding about discussions and provide a means to evaluate what users have stated and why. When opinions are product recommendations to other users, they are usually justified because they match the user profile, the profile of similar users or both. Usually, there is not an explanation about the reasoning process that has been followed to come up with specific recommendations. In fact, these recommendations tend to come directly from the recommendation algorithm that runs the website and not from the acquaintances that a user has in his social network. However, this does not follow future trends on the Web, where discovering is becoming social (as reported by Joe Kraus, Google's director of product management in a talk at the Supernova conference 2008). Moreover, people trust recommendations more when the engine can explain why it made them [2]. What is understood as a good recommendation is changing from the one that minimises some error evaluation measure, collaborative filtering or hybrid recommendation methods to the one that really makes people happier. On the other hand, when user opinions are conveyed in reviews and guides that users write to provide pieces of advice to other users, the reasons that the author has put forward his ideas may be implicit in the text. Thus, each individual opinion can be blurred as the number of posts grows. Regarding evaluation, user opinions are commonly assessed using some measures of trust and reputation (e.g. usefulness degrees, reviewer ranks, seller ratings and customer feedbacks) in decision support or business oriented

websites. These values are internally computed in the website by providing users with rating tools to score the posts of other users or to leave feedback about their experiences. Thus, user opinions can be misunderstood and rated low, decreasing unfairly the trust and reputation values of their authors.

Our study was aimed at showing how argumentation can provide a formal structure to users opinions and act as a tool to justify positions, to better understand others' views and to be able to asses them. As a result, we identified the following advantages of applying argumentation schemes to formalise interaction dialogues on social networks: a) To provide a formal structure to individual user opinions and recommendations, clarifying the reasoning patterns that have been followed to come with them and preventing users from being misunderstood; b) To provide an objective way of evaluating user opinions and recommendations by looking their associated reasoning patterns and the possible ways of attacking them (by checking the critical questions attached to argumentation schemes); and c) To provide a formal structure to the dialogue, improving the user's understanding about its underlying reasoning process and clarifying the contributions and opinions of each individual user.

As a concrete case study for our research, we gave a model of social network and we analysed two commercial websites, Amazon and eBay, fitting this model. We demonstrated how typical interactions in these environments could be seen as argumentation dialogues, and could in fact be enhanced by such features. However, to make the most of their online dialogues, sites like Amazon or eBay should make each underlying social network explicit, so that users could exploit all information resources available in the website, in turn enhancing trust and reputation. Also, sites should provide easy-to-use tools for the quick and seamless identification of argumentation schemes in users' posts. Furthermore, sites should provide tools to represent the dynamics of dialogues among users, so that attacks and defenses can be easily identified. These features may come at a considerable cost to the users, so reward mechanisms should be used. Finally, sites should provide tools for summarising and analysing the information gathered from the schemes and attacks identification. A "summary" showing statistics and a graphical representation of debate on a product would represent a concrete added value for users, and an effective motivation to engage in argumentative activities. This it would allow, for instance, users to understand at a glance which is the most prominent view of a particular product they want to purchase, without having to read all reviews.

References

1. Walton, D., Reed, C., Macagno, F.: Argumentation Schemes. Cambridge University Press (2008)
2. Linden, G., Hong, J., Stonebraker, M., Guzdial:, M.: Recommendation algorithms, online privacy and more. Communications of the ACM **52**(5) (2009)