Modeling and Analyzing Controversy in Large-Scale Cyber-Argumentation

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Abstract : Online discussions take place across different platforms. These discussions have the potential to extract crowd wisdom and capture the collective intelligence from a different perspective. However, certain phenomena, such as controversy, often appear in online argumentation that makes the discussion between participants heated. Heated discussions can be used to extract new knowledge. Therefore, detecting the presence of controversy is an essential task to determine if collective intelligence can be extracted from online discussions. This paper uses existing measures for estimating controversy quantitatively in cyber-argumentation. First, it defines controversy in different fields, and then it identifies the attributes of controversy in online discussions. The distributions of user opinions and the distance between opinions are used to calculate the controversial degree of a discussion. Finally, the results from each controversy measure are discussed and analyzed using an empirical study generated by a cyber-argumentation tool. This is an improvement over the existing measurements because it does not require ground-truth data or specific settings and can be adapted to distribution-based or distance-based opinions.

Keywords : online argumentation, controversy, collective intelligence, agreement analysis, collaborative decision-making, fuzzy logic

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