Advances to network analysis theories and methods with applications in social, organizational, and crisis settings

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ABSTRACT

This dissertation proposes several solutions to the advancement of network analysis theories and methods with specific applications in the domains of social, organizational, and crisis scenarios. The field of network analysis has attracted interest from scholars coming from a wide range of disciplines as it provides valuable theoretical and methodological toolkits to investigate complex systems of social relations, at multiple levels of analysis. In this thesis, I present substantive insights into the application of several network analysis theories and applications to the (1) social, (2) organizational, and (3) crisis response settings. For the context of social interactions, I expand structural balance evaluation to signed and directed networks, and apply this approach to examine 12 social networks. For the context of organizational communication, I demonstrate the application of multilevel modeling for egocentric networks to examine factors associated with the formation of interdisciplinary ties in a scientific organization. In addition, I leverage an extended version of structural balance evaluation for signed and directed networks to examine the sources of tension present in three organizational networks. Third, I provide a case study of response dynamics during the 2010 Haiti earthquake by examining collaboration networks prescribed by national guidelines for response, and interaction networks of the actual collaborations that took place during the earthquake response. The study designs and findings developed in this thesis provide a framework for network-based studies from many domains of interest, that includes components of network theories and methods that can help explain the social mechanisms involved in tie formation.

ALISE RESEARCH TAXONOMY TOPICS

Social computing; Social media; Natural language processing

AUTHOR KEYWORDS

Social network analysis; Structural balance; Organizational communication; Crisis informatics