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A novel crowd evaluation method for security and trustworthiness of online social networks platforms based on signaling theory

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Highlights

- (1) The paper classifies OSNs' signals and formalizes behaviors features.
- (2) A comprehensive computational model for evaluation is proposed.
- (3) We make evaluation experiments inspired by crowd computing.

Abstract: Along with the convenience provided by the open online social networks (OSNs) for the users, there are also many burning problems like insecure platform, untrustworthy information, malicious propagation, even illegal cheating. Especially, security and trustworthiness of social platforms, as the foundation of social interactions, plays an important role in active users' sharing and communication. The available research efforts of the aspects mainly focus on exploring security mechanisms and methods, as well as establishing trust relationship among social users. However, the evaluation and measurement for social platforms have not yet been well conducted. This paper proposed a novel method for crowd evaluating the security and trustworthiness of OSNs platforms based on signaling theory, which have been generally employed in the fields of economics and information management. Firstly, we classified the security and trust-critical signals of generic OSNs platform itself, and formalized static attributes and dynamic behaviors features by using the OWL and the temporal logic. Then, a comprehensive computational model for security and trustworthiness measurement was proposed inspired by crowd computing, after signals' weights were yielded based on Fuzzy Analytic Hierarchy Process Comprehensive Evaluation. Finally, the evaluation experiments were carried out by using crowd evaluation architecture on a real-world multimedia social network platform called CyVOD MSN. The experimental results denote that the proposed approach can effectively achieve the assessments of every security and trust-critical signals of the social platforms, and further realize the functional evolution of CyVOD MSN through improving insecure and untrustworthy vulnerabilities found by the crowd evaluation.

Keywords: Online Social Network; Security; Trustworthiness; Signaling Theory; Crowd Computing

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