Abstract:

Nowadays, it becomes increasingly difficult to find reliable multimedia content on the web. Detecting the fake and providing semantics that can help searching and retrieving fake multimedia remain unsolved problem which is of growing concern in the Web community. Conventional automatic approaches for detecting fake multimedia lack scalability and inability to capture media semantics by means of forgery. Furthermore, they consider all media modification as a fake which is not true in many online communities.

This research aims to find ways to manage multimedia authenticity in open, decentralized systems. We propose a trust-aware community approach for detecting and managing fake multimedia. A general framework of community-based fake multimedia detection systems is developed, where community and automatic techniques can be combined. A Multimedia Quality Profile is developed for multimedia evaluation and semantic classification with one substantial part of estimating media authenticity based on trust-aware community ratings. A corresponding service supports the construction and generation of such profiles. We address several challenges within the proposed framework. The concept of serious gaming is employed in our collaborative fake media detection approach to overcome the cold-start problem and to provide sufficient data powering our Multimedia Quality Profile and expert ranking algorithm. We also present a use case where our community-based fake detection approach can be applicable and a service for trust management that supports this approach. The evaluation reveals that the community members can discover unfair raters in a short time after their participating in the media evaluation process. Finally, we propose an algorithm for searching and ranking experts in the community and trust-aware fake multimedia detection system, ensuring its robustness against Sybil attacks by providing sufficient countermeasures. In different experiments we demonstrate that our approach strategy can be effectively used to detect fake multimedia in collaborative systems.