Trustworthy and Communal Social Classifieds using HTTP and SMS

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Abstract - *As ubiquitous networked devices continue to play an increased role in the daily lives of most people, there is a growing desire to share ever more information and perspectives from across the world. However, two major problems lurk behind both social networking and community-based classified systems: privacy and security. To address this need, we propose a trustworthy and communal social classifieds, named TCSC using HTTP and SMS, allowing users to access TCSC network using a variety of devices from traditional computer desktops with wired networking to mobile ad-hoc wireless devices such as mobile phones. We hope that such infrastructure will ultimately encourage more contributions to the community, and allow users to get to know their neighbors by increasing their level of contact with users in their geographic areas.*

Keywords: Distributed System, Social Networks, Peer-to-Peer Networks, information retrieval, Privacy.

1   Introduction

Traditional social networking services, such as those of Facebook and Twitter, allows people to share and exchange information with their friends. Similarly, online classified systems like Craiglist and ebay, helps people to buy, sell, or trade items with others [9]. However, both privacy and security problems lurk behind social networking and community-based classified systems. First, there is no similar service or method that enables people to share personal information directly and easily in a distributed and de-centralized manner. Furthermore, the dissemination of information in centralized networks can be subverted or restricted by governments or corporations if the information is deemed undesirable [11]. According to [1], some countries, such as China, block or restrict access to Facebook and Twitter in order to curtail protests and political discussions. Second, the anonymity inherent in the community-based classifieds does not provide any safeguard to the users. According to [13], the anonymity feature on Craigslist has led to many crimes such as kidnapping, threats, and prostitution. The problem is that there is no way for the buyer to know the seller, or vice versa, and thus the entire transaction contains an element of risk.

2   Related Work

2.1   Peer-to-Peer Network

[10] provide comparisons of distributed search methods for peer-to-peer networks. The structured approach, like [2][5], requires the nodes to be organized in an overlay network based on distributed hash tables (DHTs), trees, rings, which is efficient but is vulnerable to manipulation by untrustworthy administrators. The unstructured approach, like [3][6], is typically based on gossiping, uses randomization, and requires the nodes to find each other by exchanging messages over existing links. Our TCSC uses the unstructured approach, which is less vulnerable to manipulation.

2.2   Combining Social Network and Communal Classifieds

Yang [14] proposes a search mechanism for unstructured peer-to-peer networks based on interest groups, formed by nodes with similar interests. Tiago [12] describe a system for mobile search in social networks based on the Drupal content site management system using the network of social links formed from the mobile phone's address book. Rather than integrating social network searches with Web searches, our TCSC utilizes social networking services with the community-based classifieds to provide users to perform searches on a particular advertisement.

Some social-networking websites have recently begun providing a framework for third-party classified applications to combine their efforts with its existing social graph. For example, Facebook Marketplace simply connects Facebook and eBay. Similarly, [13] present an interesting application called Serefind, which combines social networking and online classifieds. However, none of the above applications addresses the problem of distrust of the centralized site - not the way our TCSC does. In TCSC, we don't tackle the security problems by having an administrator to trace individuals. Rather, we utilize feedback mechanisms for users to acquire more information about others before a transaction is started.

2.3   Mobile Services over Cellular Networks

The Mobile Agent Peer-To-Peer (MAP2P) system [8] supports mobile devices in a Gnutella file-sharing network

using mobile agents which acts as a proxy for the mobile device. Mobile social networking (MSN) applications, like [7], emerges social communication infrastructures, have attracted great attention recently and have been implemented pervasively. They help users to find old or new friends through similar interests, through location, through mutual friends, or through similar topics of conversation.

Some existing systems try to limit privacy leaks of social networking applications by decentralizing the social network and providing users more control over their data. Examples include decentralized social services on personal mobile devices [4]. Similarly, TCSC is based on a decentralized online social network where we aim to make distribution and requests through a subset of randomly chosen nodes to get rid of censorship, filtering, and subversion.

3   Research Method and Research Plan

In this paper, we proposed a Trustworthy and Communal Social Classifieds (TCSC) using HTTP and SMS, where users may access the system using a variety of devices from traditional computer desktops with wired networking to mobile ad-hoc wireless devices. We will first construct our TCSC such that it allows users to use mobile phones to connect to TCSC over HTTP via the Short Message Service (SMS). We will design the SMS interface and connect the TCSC SMS-HTTP bridge, which would allow any SMS-capable mobile phones to communicate with and obtain information from HTTP nodes in the TCSC network. In addition, we will design an Android user interface that builds on the basic SMS capabilities of mobile phones and that offers a user-friendly way of accessing TCSC using HTTP or SMS. After that, we will consider an environment in which nodes join or leave the network rapidly. We will design TCSC membership protocol, determine the parameters of the membership protocol, conduct performance evaluations, and discuss performance metrics for this membership protocol.

4   Acknowledgment

5   References

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