

Collaborative filtering of app-store content

Most smart phones come with access to an online marketplace, such as Nokia's OVI Store [1], the Apple App Store [2] or the Android Market [3], where phone owners can download (free) applications to use on their phones. There have emerged different trust models for the interaction between smart phones and app-stores, e.g., the Apple App Store only allows iPhone owners to download and install applications that have been approved by Apple, whereas the Android Market is more open. It is, however, important to note that many iPhone users "jailbreak" [4] their phones so that they can install applications from other sources, which means that the trust model for jailbroken iPhones and Android phones are quite similar, i.e., software can be downloaded and installed from anywhere.

The ability for users to download, install and run applications from anywhere, means that there are no guarantees regarding the quality and suitability of the application (as illustrated in the figure). This means that smart phone owners risk buying useless applications, but, even worse, the applications may also include different forms of malware, such as key-loggers, back-doors, etc. In the past, app-stores have offered malware infested code for download, but the open trust model of the Android Marketplace means that it currently the worst affected (most infected) app-store.

One way of dealing with data (executable or not) from unknown sources is to introduce a reputation system, where users can provide feedback regarding their own experience. This is used in many online marketplaces, such as eBay [5], but more general reputation mechanisms have also emerged, e.g., the "Web of Trust" [6] or TrustPilot [7]. A reputation system may provide smart phone owners with an assessment of the application before it is installed on the smart phone.



THE PROBLEM WITH
AVERAGING STAR RATINGS

Source: <http://imgs.xkcd.com/comics/tornadoguard.png>

An app-store reputation system may provide different forms of feedback, ranging from a stratified score, such as a simple star based system used on IMDb.com, to detailed feedback regarding important performance attributes, such as the four classes used on eBay: "Item as described", "Communication", "Shipping time" and "Shipping and handling charges". Defining the right granularity of ratings (and thereby of user feedback) will be a deciding factor in the success of a reputation system for app-store content.

Project Assignment

The purpose of this project is to analyse the requirements for a reputation system for an open app-store architecture, i.e., an app-store where any developer can offer applications for (free) download.

The report describing the proposed solution must include:

1. an Introduction with a short motivation for the project;
2. a review of related work;
3. an analysis of the requirements for an app-store. The analysis must examine the following problems:
 - a. an analysis of the trust relationships in the open app-store scenario;
 - b. an analysis of which quality attributes to base the reputation score on;
 - c. an analysis of the best way to calculate a reputation score based on the identified quality attributes;
4. the design of the necessary system architecture, which aggregates user feedback and provides a meaningful rating for other app-store users;
5. an evaluation strategy for the designed system (it is not necessary to implement the proposed system, so it is not expected that the evaluation is performed in practise, but it is important to reflect on how the proposed architecture may be evaluated. The evaluation must include a discussion of how the proposed architecture deal with difficult problems, such as framing, Sybil - and collusion attacks;
6. conclusions that summarize the contributions of the paper.

References

1. Nokia OVI Market: <http://store.ovi.com/applications>
2. Apple App Store for the iPhone. <http://www.apple.com/iphone/apps-for-iphone>
3. Android Market: <https://market.android.com/?hl=en>
4. iOS Jailbreaking: http://en.wikipedia.org/wiki/IOS_jailbreaking
5. eBay: <http://www.ebay.com/>
6. "Web of Trust". <http://www.mywot.com/>
7. "TrustPilot" website. <http://www.trustpilot.co.uk/>