

Request Summary

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Title: “I don't want this information to be tracked!”: Design and Evaluation of Information-Based Blocking of Web Tracking

Abstract

Web tracking is pervasive on the Internet and has raised significant privacy issues. Existing web tracking blockers such as Ghostery operate in a tracker-based model where they usually list the trackers present on a website and allow users to block all or individual trackers. However, our prior research (presented at PrivacyCon 2017) has found that users care more about what information is being tracked than who is tracking that information, implying the promise of an information-based blocking model. We designed Privacy Mirror, an information-based tracker blocker, which allows users to block web tracking by the types of information being tracked. To evaluate and compare our information-based model with the traditional tracker-based model, we conducted a user study with twenty participants testing these two models. Our results show that the majority of our participants (17 out of 20) preferred the information-based model for several reasons, such as easier to understand the tracking tool and having more user control.

Methodology

We developed two versions of a web tracking blocker tool. One is an information-based blocking model, which will enumerate in real-time what types of information can be tracked on a particular website. The other one is a tracker-based blocking model, similar to the mainstream blocking tools (e.g., Ghostery), which would show in real-time the names of the trackers on a particular website. Both versions allowed the users to block tracking or trackers selectively or by all. We used these two versions in our user study. We conducted a user study with 20 participants to evaluate and compare these two different blocking approaches. In each user session, we randomly selected three websites from our list of five candidate sites (Amazon.com, Chase.com, Healthcare.gov, reddit.com, and CNN.com), and tested the two blocking models on the selected websites.

Highlights of findings

17 out of 20 participants preferred the information-based blocker for a number of reasons, such as 1) easier to understand and use; and 2) perceived to have more control of web tracking and their personal information. Three participants preferred the tracker-based blocker either because they wanted to know the companies who were tracking them, or they thought using tracker-based blocker required less time. Our results also uncover a number of reasons why they decided to block or not block certain types of information.

Implications for end-user tools for controlling web tracking

Our preliminary results suggest that no single blocking mechanism is a silver bullet to satisfy everyone. While most participants preferred the information-based blocking model, the tracker-based blocking model was also perceived as valuable for knowing who is tracking users' information. We recommend that a hybrid model that incorporates both information-based and tracker-based mechanisms. Another goal for future development is how to reduce the configuration time for users. For example, through machine learning, a blocking tool could learn users' context-based preferences and configure itself automatically but also allow users to modify the configurations. Our results also suggest that people desire to know the purposes of why each type of information is collected. Future tools should try to provide such information.

Differences from previous studies

Existing academic research and industry practices on web tracking blocking tools focus on the tracker-based blocking model. These blockers list the trackers on a website and allow users to block all or individual trackers. To the best of our knowledge, this is the first project that designed an information-based blocking model. Our user studies provide promising empirical results of this new blocking model.

Publication

We have one paper describing this research currently under blind review (attached)

Yaxing Yao, Huichuan Xia, Smirity Kaushik, Yang Wang. "I don't want this information to be tracked!": Design and Evaluation of Information-Based Blocking of Web Tracking. Under Review.

A related publication that inspired this research:

Yao, Yaxing, Davide Lo Re, and Yang Wang. "Folk Models of Online Behavioral Advertising." ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW), 2017.