

# UNDERSTANDING AND CAPTURING PEOPLE'S MOBILE APP PRIVACY PREFERENCES

## THESIS PROPOSAL

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### ABSTRACT

A number of ongoing research efforts focus on protecting mobile users' privacy and security, using software analysis techniques or security extensions with app-specific privacy controls. These proposed extensions might overwhelm users with unnecessary and difficult to understand details. Unfortunately, there has been little work done to understand users' privacy preferences regarding mobile apps. A key question is whether it is possible to identify how apps' privacy-related behaviors impact users' privacy preferences in order to simplify the decisions users have to make without reducing their level of control over the decisions they really care about.

The proposed dissertation work aims to help answer this question. Specifically, we propose to use crowdsourcing and user-oriented machine learning techniques to capture and quantitatively model users' privacy preferences regarding mobile apps. We will perform detailed static analysis on a representative set of apps on the Android platform to understand their private resource usages. We will also use crowdsourcing to collect users' perceptions of these apps, including their expectations and levels of comfort in using these apps. The idea is to identify a relatively small number of sensitive data usage scenarios that most significantly impact users' privacy decisions when using a particular mobile app. By performing clustering, we expect to isolate different classes of mobile apps that elicit common privacy concerns and different groups of users with distinct privacy preferences. Based on these clusters, we want to see if we can identify a small number of user-understandable privacy profiles (or "personas") that can be used to simplify the privacy settings users could be exposed to.

The findings of this thesis can offer insight into improving current mobile privacy interfaces and settings. As a by-product, our resulting models and findings could also help mobile app developers estimate the user acceptance of their apps from a privacy perspective.

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