REDESIGNING MOBILE PRIVACY

RUTGERS
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MOTIVATION

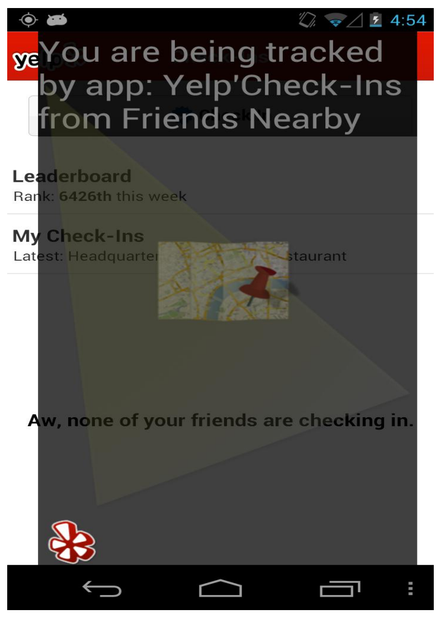
A test application was able to copy an iPhone's photo library after it was given access to location data.

Many mobile applications access user's location, which poses a threat to their privacy.

Most mobile phones users are unaware of when and how location based applications access and use their location information.

We are developing, validating and experimenting with methods to quantify location privacy concerns in real life settings.

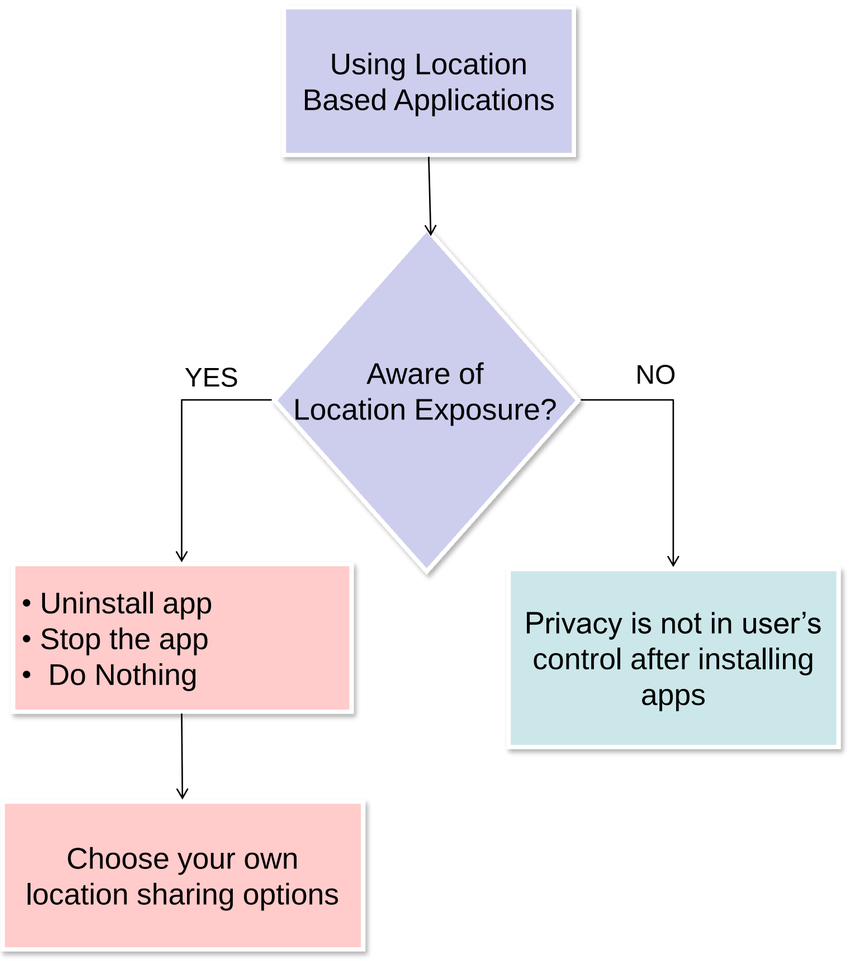
APPROACH



Our design surfaces location disclosure to users. This increases their awareness of location data gathering.

This will help users to distinguish between useful and unnecessary access to their locations.

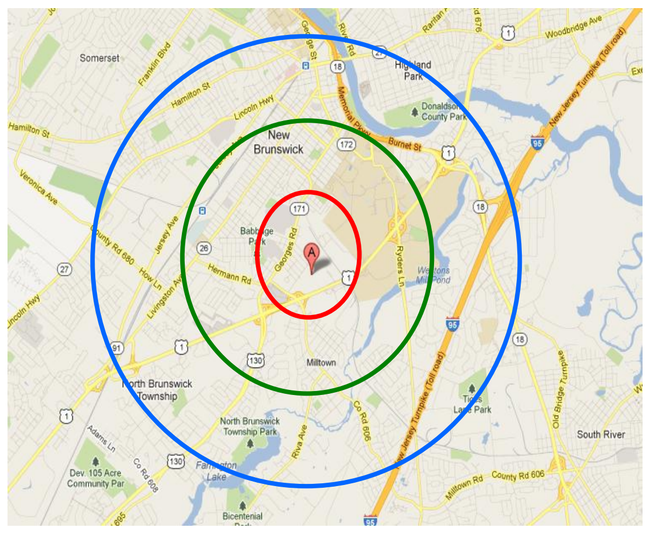
The following is a logic diagram for user awareness and reaction to location exposure



We want to observe the user's reaction when they find out that they are being tracked. For example, on discovering an unneeded access to his location, a user might stop the app instantly, or uninstall it, or might not react at all.

This will guide us in user-centered redesign of mobile location privacy.

SECURE YOUR LOCATION



Each circle in the figure represents a different location information granularity.

Instead of letting an application access raw coordinates, we quantify the location granularity for better security. We can send any of the following information:

- Building Name (Red)
- Complex Name (Green)
- Town Name (Blue)

LOCATION EXPOSURE

Most mobile phones users are unaware of location exposure.

They might assume their location is secure, while they are using these applications that cause location disclosure.

FUTURE WORK

Client-Based Modeling: personalizing client's location-sharing options.

TIME	MOST LIKELY LOCATION	ADVANTAGE
8:30 AM, Weekday	DRIVING TO WORK	The phone knows the path you usually take
9 AM – 5 PM, Weekday	WORK	Set different granularity for applications
10 PM, Weekday	HOME	
7 PM, Weekend	OUTDOORS	Have application see your exact location

We are developing a client-based model that knows the user's most visited/important locations and when the person is most likely to be there. This would stop applications from querying user's location when not needed.

Additionally, users could select the granularity of these most visited locations that they would let applications use.

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