Researchers find accelerometers may pose security risk for smartphones

January 30 2013, by Bob Yirka

(Phys.org)—Visiting professor Adam Aviv and a team of colleagues from Swarthmore College in Pennsylvania, has found that studying the way a smartphone responds to being tapped as a person types in a PIN number, can help someone else guess that PIN number. The security problem came to light as the team was studying data sent by a typical smartphone accelerometer.

A smartphone accelerometer is an electronic component that allows for data to be collected regarding the orientation of the phone. Applications loaded on the phone use it to allow for automatically re-orienting the screen image, for example, when it is turned to one side or the other. The team has found that the data signals that are sent by the accelerometer aren't as controlled as those for applications that run on the phone, and are thus more easily accessed by someone seeking to unlock a PIN on a stolen phone.

Whenever a phone is in use, data is sent in a constant stream from the accelerometer, alerting apps to real-time orientation changes. That data comes in the form of messages that indicate phone movements – up or down, forwards or back, and sideways. The accelerometer is so sensitive that it notes the slight changes in orientation that result when a user taps lightly on the screen – and tapping different spots on the screen causes slight differences changes. That's the data that the researchers used. They found that capturing accelerometer data and analyzing (using software that relied on a database of pre-captured data) the slightly different ways the device was moved during the time a person was inputting their PIN, could provide enough information to assist in guessing what that PIN was, thereby allowing access to the phone. They report a success rate of 43 percent when making just one guess. When given five tries, the success rate went up to 73 percent.

The team found that the typical smartphone does not require permission from its owner to broadcast orientation data from sensors, and that the

data sent was often independent of the applications that were relying on its capabilities. They also found that if a user typed in their PIN code while walking, the guess rate declined as the added noise served to defeat their efforts.

More information: via [BBC](#)

© 2013 Phys.org

Citation: Researchers find accelerometers may pose security risk for smartphones (2013, January 30) retrieved 1 May 2024 from https://phys.org/news/2013-01-accelerometers-pose-smartphones.html