Once smartphones become truly common, so will the viruses that attack them

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Professor Albert-Laszlo Barabasi, left, and Ph.D. student Pu Wang studied the spread of mobile viruses.

(PhysOrg.com) -- Northeastern researchers say that it's only a matter of time before computer viruses attack smartphones, like the Blackberry and iPhone, on a massive scale. But their study may also hold the key to blunting the effects of these attacks.

Northeastern University physicist and network scientist Albert-László Barabási and his coauthors tracked the spreading potential of Bluetooth and multimedia messaging service (MMS) viruses. Writing in the latest issue of *Science*, they predict that these viruses will become a real threat to those smartphones that gain at least a 10 percent market share.

Currently, the user base for these handheld devices is small and fragmented, making a major virus outbreak impossible, said Barabási, Distinguished Professor of Physics and director of the Center for Complex Network Research (CCNR) at Northeastern University.

"Once smartphones become more widely used and one of the operating systems increases its market share to a certain percentage," said Barabási, "the users of that system will become susceptible to mobile viruses within a matter of minutes"—an outbreak that could be worse than anything caused by traditional computer viruses.

However, understanding the basic spreading patterns of these viruses may enable researchers to devise ways to minimize their impact, said Pu Wang, PhD candidate at CCNR and lead author of the study.

The study's findings "could help estimate the realistic risk carried by mobile viruses and aid the development of proper measures to avoid the costly impact of major outbreaks," said Wang.

The authors assessed the spreading dynamics of mobile viruses by modeling the location, the mobility and the communication patterns of mobile phone users. In a simulated study, the team used anonymous billing records from a mobile phone provider and tracked the calling patterns and coordinates of the mobile phone tower closest to the user at the time of the call.

Bluetooth and MMS viruses differ in their spatial spreading patterns: The former infects predominantly users in the geographical vicinity of the virus' originating point, making its spread relatively slow, while the latter is capable of spreading to everyone in the address book of the originating user within minutes.

Hybrid viruses—capable of simultaneously using both Bluetooth and MMS connections to spread—are also easy to contain at the moment because the operating system's small market share forces them into the slow Bluetooth spreading mode.

In addition to Wang and Barabási, the study was

coauthored by Marta C. González of Northeastern University and César A. Hidalgo of the Center for International Development at Harvard University's Kennedy School of Government.

Provided by Northeastern University (news : web)