Russian experts submit 'impenetrable' smartphone protection system

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Tracking of finger movements by a smartphone Credit: RIA Novosti. Alina Polyanina

The team of the Institute of Laser and Plasma Technologies at the National Researcj Nuclear University MEPhI has developed a system of

continuous authentication of mobile device users based on behavioral biometrics. The research results have been presented in several international conferences and published in an article titled "Mobile authentication over hand-waving".

One of the most popular systems for the protection of mobile devices is authentication based on passwords. However, it is inconvenient for users because they have to enter a numeric or pattern lock. The alternative is authentication by fingerprint, which also has significant drawbacks: Attackers using malicious software can copy user fingerprints, and even add their own, blocking access to a device.

The advantage of the new method by the specialists from MEPhI is continuous protection from outside interference without any additional action by the user. Behavioral biometrics methods monitor a user's habitual parameters while handling a device, thereby determining who is using a smartphone—the owner or another person. Each person has a unique and inimitable style of handling the phone, and the system is based on identifying these unique characteristics.

Such an authentication system is convenient because, unlike passwords or fingerprints, behavioral biometric features cannot be lost, copied, stolen or faked. This ensures a high degree of protection for the device from outside interference.

"The scientific novelty of our project is that for the first time we applied the technology for data analysis, machine learning and artificial neural networks to provide continuous authentication of mobile device users according to their behavioral biometric characteristics. The sensitivity of the sensors used in modern smartphones allows you to select the behavioral characteristics of each user and to use authentication with high accuracy on the basis of aggregate data coming from the touchscreen and other sensors," said the project leader Konstantin

Kogos.

More information: Alina N. Filina et al. Mobile authentication over hand-waving, *2017 International Conference "Quality Management,Transport and Information Security, Information Technologies" (IT&QM&IS)* (2017). DOI: 10.1109/ITMQIS.2017.8085764

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