Research Commercialization

Value-based Information Flow Tracking for Sensor Devices

Technology #2018-012

Invention Summary:

Mobile devices have a variety of sensors that enable a wide range of useful applications from step tracking to point of care medical services. In addition, sensors are now in automobiles, IoT and other devices. As the use of devices with sensors increase, it becomes important that information from these sensors does not leak to outside parties. Researchers at Rutgers University and UCLA have designed a novel Information Flow Tracking (IFT) technique and software, called METRON, that implements a value-based tracking solution to detect potential data leaks from apps on mobile devices and prevent loss of information. METRON tracks data flows from a set of sources (e.g. accelerometer, GPS, or heart-rate Sensor) to a set of sinks (e.g., network sockets, IPC messages, and files). When data reaches a sink, METRON detects the information flows involving tainted values. The innovative way in which METRON detects data leaks allows it to maintain the same accuracy as state of the art IFT techniques while overcoming problems that they currently face.

Estimated Size of Market:

The market size for the security of global mobile devices is expected to grow at a CAGR of 46.6% to $73.5 billion by 2022.

Other Market Applications:

- Mobile and software security analysis
- Privacy protection on mobile devices
- Data flow analysis for bug detection

Advantages:

- Improves accuracy detecting data leaks than current IFT’s.
- Provides detailed leakage reports.
- It uses less memory and computational power.
- No modification of the operating system or the apps of interest required.
- Support for Android and iOS platforms.
Intellectual Property & Development Status:

Patent pending. Software is available. This technology and software is available for licensing and/or research collaboration with industry partners.

Inventors

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Saman received his Ph.D. in Computer Science at UIUC in 2011, and B.Sc. in Computer Engineering from Sharif University of Technology in 2006. He is now an associate professor in the Electrical and Computer Engineering Department at Rutgers University.

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Moustafa is a Ph.D. Candidate in Computer Science Department at the University of California, Los Angeles (UCLA). He is working with Prof. Mani Srivsatava as a member of the Networked and Embedded Systems Laboratory (NESL). Moustafa is also a team member of the DAIS-ITA project, and he was a research intern at Qualcomm Research (2015), and software engineering intern at Google (2016).