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“MASK: Masquerade of Mobile Applications Against Behavioral Tracking”
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ABSTRACT

The prevalence of smartphones makes mobile applications an essential part of our daily lives and businesses. While enjoying personalized, sensor-assisted services provided by these applications, mobile end-users also expose their behavior extensively and continuously, which makes mobile applications a possible agent for tracking their behavior. Thus, there is an urgent need to provide end-users an option to opt-out behavioral tracking under this context.

In this talk, we propose MASK, an incognito mode for mobile applications. MASK is designed to defend against the threat of exploiting various long-lived, consistent identifiers for behavioral tracking purposes, including the exploitation of web cookies and software identifiers, which have largely been overlooked by existing solutions. Furthermore, MASK provides adjustable and adaptive privacy guarantees according to both the app's nature and the user's choice. We have prototyped MASK on Android in user space, without modifying the OS or requiring root privilege. Several aspects of MASK, such as applicability and effectiveness, are evaluated using real-world experiments and traces, demonstrating its potential benefits in practical settings.

BIOGRAPHY

KANG G. SHIN is the Kevin & Nancy O'Connor Professor of Computer Science in the Department of Electrical Engineering and Computer Science, The University of Michigan, Ann Arbor. His current research focuses on QoS-sensitive computing and networking as well as on embedded real-time and cyber-physical systems.

He has supervised the completion of 74 PhDs, and authored/coauthored more than 800 technical articles (more than 300 of these are in archival journals), a textbook and more than 20 patents or invention disclosures, and received numerous best paper awards, including the Best Paper Awards from the 2011 ACM International Conference on Mobile Computing and Networking (MobiCom'11), the 2011 IEEE International Conference on Autonomic Computing, the 2010 and 2000 USENIX Annual Technical Conferences, as well as the 2003 IEEE Communications Society William R. Bennett Prize Paper Award and the 1987 Outstanding IEEE Transactions of Automatic Control Paper Award. He has also received several institutional awards, including the Research Excellence Award in 1989, Outstanding Achievement Award in 1999, Distinguished Faculty Achievement Award in 2001, and Stephen Attwood Award in 2004 from The University of Michigan (the highest honor bestowed to Michigan Engineering faculty); a Distinguished Alumni Award of the College of Engineering, Seoul National University in 2002; 2003 IEEE RTC Technical Achievement Award; and 2006 Ho-Am Prize in Engineering (the highest honor bestowed to Korean-origin engineers).

He was a co-founder of a couple of startups and also licensed some of his technologies to industry.