Around the World (Wide Web) in 60 Minutes: An Attacker's Journey Through the Modern Web Ecosystem

by Iason **Polakis, University of Illinois at Chicago**

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Host: Evangelos Markatos, Computer Science Department, University of Crete

Abstract

The web plays a pivotal role in many facets of everyday life, and ensuring that user accounts and the sensitive data found therein are protected is of paramount importance. However, designing robust and effective defenses often requires security researchers to assume the role of an attacker and proactively identify vulnerabilities and design flaws. In this talk I will first present a short overview of our recent work on developing novel and practical attacks that target the major software components of the web ecosystem: browsers and web and mobile applications. Subsequently, I will focus on our upcoming work that presents the first comprehensive and in-depth exploration of the security implications of real-world systems incorporating browser fingerprinting techniques into their authentication workflow. In our work we demonstrate how attackers can replicate users' fingerprints on different devices to deceive the risk-based authentication systems of high-value web services (e.g., e-banking, cryptocurrency trading) to completely bypass two-factor authentication.

Short Biography

Jason Polakis is an Assistant Professor in the Department of Computer Science at the University of Illinois at Chicago (UIC). He received his B.Sc. ('07), M.Sc. ('09), and Ph.D. ('14) degrees in Computer Science from the University of Crete, Greece, while working as a research assistant in the Distributed Computing Systems Lab at FORTH-ICS. Prior to joining UIC he was a postdoctoral research scientist at Columbia University. He is broadly interested in identifying the security and privacy limitations of Internet technologies and mobile systems, developing fully automated auditing frameworks, and designing robust defenses and privacy-preserving techniques. His research has revealed significant flaws in popular web services and browsers, and major vendors have deployed his proposed defenses. Jason's research is regularly published in the premier computer security conferences (ACM CCS, USENIX Security, IEEE S&P, ISOC NDSS).