TOMMASO INNOCENTI

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Research Overview

My research focuses on Security and Privacy to increase the security of general users. My works reflect my passion and tenacity to investigate complex security problems. With my research, I increased the security of the Best Current Practice of OAuth and the OpenID protocol. Various topics in Web Security attract my interest, but the current focal point of my research is Web Authentication.

EDUCATION

Ph.D. Computer Science | *Cybersecurity* Sep. 2018 – (Expected Nov. 2024)
Northeastern University | GPA: 4.0/4.0 Boston, USA

Master in Computer Science and Engineering Sep. 2014 – May 2018
Politecnico di Milano | Grade: 101/110 Milano, Italy

Erasmus Experience Sep. 2015 – Feb. 2016
Universidad Complutense de Madrid (UCM) Madrid, Spain

WORK EXPERIENCE

Amazon Jun. 2024 – Aug. 2024
Amazon Web Services | AWS security engineer NewYork, USA
- Evaluated current state of the art for domain generation algorithm (DGA) and DNS data-exfiltration identification against AWS detection system

LEADERs Program Spring 2020 – (ongoing)
Gordon Institute of Engineering Leadership | Northeastern University Boston, USA
- Applied experiential learning initiative that integrates leadership and professional-skills within a research project

Research Assistant Apr. 2018 – Sep. 2018
Northeastern University Boston, USA
- Managed a research topic in a team environment
- Performed cutting edge security research

Master Thesis at SecLab Nov. 2016 – June 2017
Less is more (Secure): automated reduction of the attack surface in modern Browser Boston, USA
- Investigated the Browser functionalities as potential attack surface
- Instrumented the Browser functionalities to define the minimal set of required functionality
- Generated a model able to reduce the Attack surface and increase the browser performance

PROJECTS AND RESEARCH

"Only as Strong as the Weakest Link": On the Security of Brokered Single Sign-On on the Web *Spring 2024*
Tommaso Innocenti, Louis Jannett, Christian Mainka, Vladislav Mladenov, Engin Kirda *San Francisco, CA*
IEEE Symposium on Security and Privacy '25 | (A.R. 106/739 = 14.3%)

OAuth 2.0 Redirect URI Validation Falls Short, Literally *Fall 2023*
Tommaso Innocenti, Matteo Golinelli, Ali Mirheidari, Kaan Onarlioglu, Bruno Crispo, Engin Kirda *Austin, TX*
ACSAC'23 | (A.R. 104/497 = 20.9%)

FRAMESHIFTER: Security Implications of HTTP/2-to-HTTP/1 Conversion Anomalies *Sum 2022*
Bahruz Jabiyev, Steven Sprecher, Anthony Gavazzi, *Tommaso Innocenti*, Kaan Onarlioglu, Engin Kirda *Boston, MA*
USENIX'22 | (A.R. 392/2535 = 15.4%)

You've Got (a Reset) Mail: A Security Analysis of Email-Based Password Reset Procedures *Sum 2021*
Tommaso Innocenti, Ali Mirheidari, Amin Kharraz, Bruno Crispo, Engin Kirda *Virtual*
DIMVA'21 | (A.R. 16/66 = 28.7%)

CONFERENCES AND PRESENTATIONS

OWASP Italy Meetup	March 2024
OAuth 2.0 Redirect URI Validation Falls Short, Literally	Virtual
OWASP Boston Chapter December meetup	December 2023
OAuth 2.0 Redirect URI Validation Falls Short, Literally	Boston, Massachusetts
Annual Computer Security Applications Conference (ACSAC)'23	December 2023
OAuth 2.0 Redirect URI Validation Falls Short, Literally	Austin, Texas
OAuth Security Workshop (OSW)'23	August 2023
OAuth 2.0 Redirect URI Validation Falls Short, Literally	Royal Holloway University, London
Federal Trade Commission (FTC) invited talk	October 2021
You've Got (a Reset) Mail: A Security Analysis of Email-Based Password Reset Procedures	Virtual
Detection of Intrusions and Malware & Vulnerability Assessment (DIMVA)'21	July 2021
You've Got (a Reset) Mail: A Security Analysis of Email-Based Password Reset Procedures	Virtual

PROFESSIONAL SERVICES/NETWORK

Co-Chair Security Interest Group (SING) – Invited Expert	July 2024
World Wide Web Consortium (W3C)	
OpenID foundation	October 2023
Conformance-suite	
IETF OAuth Working Group	October 2023
OAuth 2.0 Security Best Current Practice	
Conference on Computer and Communications Security (CCS)'23	November 2022
Sub-reviewer	Copenhagen, Denmark
USENIX'23	August 2022
Sub-reviewer	Anaheim, California

SELECTED ACHIEVEMENT/ GRANTS

Northeastern University Dissertation Completion Fellowships	August 2024
PhD network	Boston, Massachusetts
Third place at Tracer FIRE (Forensic Incident Response Exercise)	December 2023
Capture The Flag | Workshop ACSAC '23	Austin, Texas
Annual Computer Security Applications Conference ACSAC '23	December 2023
OAuth 2.0 Redirect URI Validation Falls Short, Literally | Travel grant	Austin, Texas
Connect2id security fix	September 2023
OAuth 2.0 Redirect URI Validation Falls Short, Literally	Bulgaria
OAuth Security Workshop (OSW)'23	August 2023
OAuth 2.0 Redirect URI Validation Falls Short, Literally | Student scholarship	London, United Kingdom
GO Language | CVE-2022-27664	September 2022
FRAMESHIFTER: Security Implications of HTTP/2-to-HTTP/1 Conversion Anomalies	Google, Mountain View
Apache Traffic Server | CVE-2022-31780	August 2022
FRAMESHIFTER: Security Implications of HTTP/2-to-HTTP/1 Conversion Anomalies	Wakefield, Massachusetts
Erasmus+	Sep. 2015 Feb. 2016
Exchange program	Complutense University of Madrid

SKILLS

Languages: English C1 (TOEFL score:100/120) , Spanish A1, Italian (mother tongue)
Programming: C, Java, C++, Python, SQL, HTML, Node.js, Puppeteer, JavaScript, Docker, Git
Document Creation: Microsoft Office Suite, LaTex