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Tzipora Tracy Halevi

Interests Cyber Security, Security of embedded devices, Signal processing, Education

Research Positions

Assistant Professor, Brooklyn College, Brooklyn, NY 2017 -

Visiting Scientist, IBM Research, Yorktown, NY 2016 - 2017

Research and development in code obfuscation and Blockchain.

Cryptographic code obfuscation: Developed the first library implementing cryptographic obfuscation of branching programs, using mathematical libraries, as part of the DARPA SafeWare program.

Blockchain: Developed a blockchain demo application that supports multi-party computation (MPC) using the IBM Fabric hyperledger blockchain framework. Created a proposal for hyperledger changes that would enable creating commercial applications using MPC.

Postgraduate Researcher, NYU Polytechnic School of Engineering, (2012 – 2015)

Associate Director, NYU CRISSP IGERT/INSPIRE, (2012 – 2015)

Other Academic Experience

NYU CRISSP IGERT/INSPIRE traineeship, Interdisciplinary Research and Education on Security and Privacy, (2011 – 2012)

- Designed and implemented signal processing algorithms and classifiers for security attacks and defenses, including pairing, eavesdropping and access control. Implemented statistical signal processing algorithms for social science studies.

Graduate Research Assistant, Polytechnic Institute of NYU, (2009 - 2011)

Graduate Research Assistant, Northeastern University, Boston, MA (1996–1997)

Industry Experience

1997–2007 AFP Imaging Corp. Elmsford, NY

Senior Software Engineer

- Instituted/enhanced the entire software development process for the company. Developed digital imaging systems for the medical and dental markets. Responsible for the full software life cycle, from specification and architectural design, through development, testing, documentation, and all the way to release and maintenance.
- Responsible for all QA documentation of the software, including ISO/FDA approval process.

1994–1996 Objects, Inc. Danvers, MA

Software Engineer

Developed and implemented software tools for DOS and Windows. In charge of transforming these tools from DOS to Windows.

Education

Polytechnic Institute of New York University, Brooklyn, NY

Ph.D. Electrical and Computer Engineering, 2012

Thesis: Using Audio for Security and Privacy: A Dual Perspective,
ISBN: 978-1-267-86543-4
Advisor: Prof. Nitesh Saxena

Northeastern University Boston, MA

M.Sc. in Electrical Engineering, 1997

Thesis: Statistical Methods for Object Detection in a Three Dimensional Volume,
Advisor: Prof. Eric Miller

Technion, Israel Institute of Technology, Haifa, Israel

B.Sc. in Electrical Engineering, 1993

Publications

Halevi S., Halevi T., Shoup V., Stephens-Davidowitz N., Implementing BP-Obfuscation Using Graph-Induced Encoding, ACM Conference on Computer and Communications Security (CCS2017)

Halevi, T., Memon, N. D., Lewis, J., Kumaraguru, P., Arora, S., Dagar, N., Aloul, F. A., and Chen, J. Cultural and Psychological Factors in Cyber-Security. Accepted at 18th International Conference on Information Integration and Web-based Applications & Services (iiWAS2016)

An HMM-based Multi-sensor Approach for Continuous Mobile Authentication, Roy A., Halevi T. and Memon N., International Conference for Military Communications (MILCOM), October 2015.

Cybersecurity Competitions: The Human Angle, Bashir M., Lambert A., Guo B., Memon N. and Halevi T., IEEE Security & Privacy, Sept.-Oct 2015.

Leap Motion Controller for Authentication via Hand Geometry and Gestures, Chan A., Halevi T., Memon N., International Conference on Human-Computer Interaction (HCI), August 2015

Investigating users' readiness to trade-off biometric fingerprint data, Halevi T., Kuppusamy T.K., Caiazzo M., Memon N., Identity, Security and Behavioral Analysis (ISBA), March 2015

Glass OTP: Secure and Convenient User Authentication on Google Glass, Chan P., Halevi T., Memon N., Wearables Workshop of Financial Crypto (WAHC), January 2015,

Keyboard acoustic side channel attacks: exploring realistic and security-sensitive scenarios, Halevi T. and Saxena N., International Journal of Information Security, September 2014

An HMM-based Behavior Modeling Approach for Continuous Mobile Authentication, Roy A., Halevi T. and Memon N., IEEE International Conference on Acoustics, speech and signal processing, May 2014

Touchpad Input for Continuous Biometric Authentication, Chan A., Halevi T., Memon N., Communications and Multimedia Security, September 2014

Context-Aware Defenses to RFID Unauthorized Reading and Relay Attacks, Halevi T., Li H., Ma D., Saxena N., Voris J., and Xiang T., IEEE Transactions on Emerging Topics in Computing, Nov. 2013

A Study of Cyber-Security and Personality Traits, Halevi T., Lewis J. and Memon N., Second International Workshop on Privacy and Security in Online Social Media (PSOSM), May 2013

Acoustic Eavesdropping Attacks on Constrained Wireless Device Pairing, Halevi T., Saxena N., Transactions on Information Forensics & Security (IEEE TIFS journal), March 2013

Sensing-Enabled Channels for Hard-to-Detect Command and Control of Mobile Devices, Hasan R., Saxena N., Halevi T., Zawoad S. and Rinehart D., ACM Symposium on Information, Computer and Communications Security (ASIACCS), May 2013

Secure Proximity Detection for NFC Device based on Ambient Sensor Data, Halevi T., Ma D., Saxena N. and Xiang T., European Symposium on Research in Computer Security,.(ESORICS), September 2012

Sensing-Enabled Defenses to RFID Unauthorized Reading and Relay Attacks without Changing the Usage Model, Halevi T., Lin S., Ma D., Prasad A.K., Saxena N., Voris J. and Xiang T.. International Conference on Pervasive Computing and Communications (PerCom), March 2012

A Closer Look at Keyboard Acoustic Emanations: Random Passwords, Typing Styles and Decoding Techniques, Halevi T. and Saxena N., ACM Symposium on Information, Computer and Communications Security (AsiaCCS), May 2012

Accelerometers and Randomness: Perfect Together, Voris J., Saxena N., and Halevi T., ACM Conference on Wireless Network Security (WiSec), June 2011.

Tree-based HB Protocols for Privacy-Preserving Authentication of RFID Tags, Halevi T., Saxena N. and Halevi S., Journal of Computer Security - Special Issue on RFID System Security, Volume 19, Issue 2, April 2011.

On Pairing Constrained Wireless Devices Based on Secrecy of Auxiliary Channels: The Case of Acoustic Eavesdropping, Halevi T. and Saxena N., ACM Conference on Computer and Communications Security (CCS), October 2010

Using HB Family of Protocols for Privacy-Preserving Authentication of RFID Tags in a Population, Halevi T., Saxena N. and Halevi S., Workshop on RFID Security (RFIDSec), July 2009

Technical Report

Spear-Phishing in the Wild: A Real-World Study of Personality, Phishing Self-Efficacy and Vulnerability to Spear-Phishing Attacks, Halevi T., Memon N., Nov O., https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2544742

Committee Member

RFID Security 2014, 10th Workshop on RFID Security
SIOT 2015, International Workshop on Secure Internet of Things
ISBA 2017, IEEE International Conf. on Identity, Security and Behavior Analysis

Awards & Honors

NSF Cybertrust/Trustworthy Computing Assistantship, (2009 – 2011) NYU CRISSP
IGERT/INSPIRE Traineeship, (2011 - 2012)

Patent

T. Halevi, Digital dental x-ray sensor protector – United States Patent 7309158