



Department of Computer Science Faculty Candidate

Doublethink Vulnerabilities and System Security

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Hosted by: Reza Curtmola

Date: Wednesday, December 7, 2022

Coffee: 2:15 PM – 2:30 PM

Time: 2:30 PM – 3:30 PM

Location: GITC 4402 (4th floor Seminar Lecture Hall)

WebEx Link: <https://njit.webex.com/njit/j.php?MTID=m88164a0a4e8eaf666f52982e5a814e33>

<http://cs.njit.edu/seminars>

Abstract:

As software has become increasingly complex, the problem of computer security has grown exponentially. In response to the growing number of cyber security attacks, layers of security patches have been introduced into existing systems. Although these solutions have thwarted some attacks, users must blindly trust the increasingly complex system to correctly sandbox malicious programs. In response, we propose mitigation solutions for existing systems, and explore the limit of hardware isolation in our new designs.

This talk gives an overview of 1) computer vulnerabilities and the discovery of new vulnerabilities, 2) mitigation through security checks and sandboxing, and 3) hardware isolation at the lowest possible layer. The overarching idea of the talk is that we need to take a proactive approach to security, in particular, to build security in from the ground up—not just to add more patches on top of unsafe systems.

Bio:

Zhihao "Zephyr" Yao is a system security researcher and Ph.D. candidate at the University of California, Irvine. He received his M.S. and B.S. with honor from the same institution. His research is motivated by the need to establish trust in an increasingly complex technological world. Along this line of research, he has discovered a few dozen vulnerabilities in various system components, and has published system solutions at top-tier conferences, such as USENIX Security, CCS, and ASPLOS.