

The University of Chicago Computer Science Department  
**PRESENTS:**

“Improving Security at an Internet Scale: A Data-Driven Approach”



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**Abstract:**

The state of security across the Internet is poor, and it has been so for years. Meanwhile, attacks have become ever more frequent and consequential. How do we actually make meaningful progress? To do so, we must move beyond the folklore that heavily influences Internet security practices today, and establish 1) empirical grounding on how and why security problems manifest the way they do across the Internet, and 2) data-driven methods for improving security at an Internet scale.

In this talk, I will describe my evidence-based and holistic approach to security, illustrated by my work on improving how we remedy security problems (vulnerabilities, misconfigurations, and compromise incidents) for Internet systems. Using a variety of empirical methods, including Internet-wide network measurements, user studies, machine learning, and code analysis, my research systematically identifies how security is managed for Internet systems, factors that contribute to continued vulnerability, and barriers that prohibit the effective remediation of security concerns. Informed by insights from this work, I develop methods and systems for more effective remediation at an Internet scale.

**Bio:**

*Frank Li is a Ph.D. Candidate in Computer Science at UC Berkeley, advised by Prof. Vern Paxson. Frank's research interests are broadly in the areas of network security, privacy, and measurement. Using various empirical methods, his research brings empirical grounding to the study of Internet security in practice, while providing evidence-based guidance on the design of methods and systems for improving security at an Internet scale. His work spans various topics, from Internet-wide outreach to vulnerability patching. He is the recipient of a NSF Graduate Research Fellowship (GRFP) and a National Defense Science and Engineering Graduate Fellowship (NDSEG). His research has been distinguished with a Best Paper Award at the ACM Internet Measurement Conference (IMC), and his teaching has been recognized with a UC Berkeley Outstanding Graduate Student Instructor award. Frank received his Bachelor's from MIT.*

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**Host: David Cash**