

Spring Seminar Series
Department of Electrical and Computer Engineering

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Zoom Video Conference: <https://temple.zoom.us/j/97487104799>

Building an Internet Emulator for Cybersecurity Education

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Abstract: Learning from doing is essential in Cybersecurity education, but designing hands-on activities that involve a large number of computers has been very challenging. To solve this problem, we have developed an open-source Internet Emulator, which allows us to create a mini-Internet that can run inside a single machine. Even though it is small, it has all the essential elements of the real Internet, including Internet exchanges, autonomous systems (stub and transit), networks, BGP routers, internal routes, and hosts running various services. This Internet can be the basis for many interesting activities. Moreover, we have developed modules that can be deployed on top of this Internet emulator. These modules include DNS infrastructure, Blockchain, Botnet, Darknet, and many more are being developed. Using this Internet emulator, we can design interesting hands-on labs for cybersecurity education. In the talk, I will present the technical details of the Internet emulator and demonstrate some of the interesting applications.



BIOGRAPHY: Dr. Wenliang (Kevin) Du is the Laura J. and L. Douglas Meredith Professor at Syracuse University. His current research interest focuses on mobile system security and security education. He received his bachelor's degree from the University of Science and Technology of China in 1993 and Ph.D. degree from Purdue University in 2001. He founded the SEED-Labs open-source project in 2002. The cybersecurity lab exercises developed from this project are now being used by over 1000 institutes worldwide. The book he published in 2017, *"Computer & Internet Security: A Hands-on Approach"*, has been adopted as a textbook by 220 institutes. His research has been sponsored by multiple grants from the National Science Foundation and Google. He is a recipient of the 2013

ACM CCS Test-of-Time Award and the 2017 Academic Leadership award from the 21st Colloquium for Information System Security Education.