



Thursday September 22nd at 1pm
Summerlee Science Complex, Room 1303

Bring Your Own Internet to Cybersecurity Research and Education

Abstract: To provide a learning and testing environment for cybersecurity education and research, we have developed an open-source Internet Emulator (called SEED Emulator), which allows us to create a miniature Internet that can run inside a single personal machine or on multiple cloud machines. 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. Many interesting network technologies can also be deployed on the emulator. We have used this emulator to create a DNS infrastructure, an Ethereum blockchain, a Botnet, a Darknet, an Internet worm, and many more are being developed. This emulator has been primarily used for education after it was released in August 2021, but recently several research groups have started to use it for their research. In this talk, I will present the design and features of the SEED emulator and its applications in both research and education. I will also demonstrate some of the interesting hands-on lab activities based on the emulator.

Presented by: Dr. Wenliang (Kevin) Du, Professor, Syracuse University

Speaker Bio: Dr. Wenliang (Kevin) Du is the Laura J. and L. Douglas Meredith Professor at Syracuse University. His current research interest focuses on Internet emulation and cybersecurity 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. His self-published book, "Computer & Internet Security: A Hands-on Approach", has been adopted as a textbook by 246 institutes. His online courses published on Udemy frequently won the "best seller" and "highest rated" recognition. He is the recipient of the 2017 Academic Leadership award from the 21st Colloquium for Information System Security Education. His research has been sponsored by multiple grants from the National Science Foundation and Google. He is a recipient of the 2021 ACSAC Test-of-Time Award and the 2013 ACM CCS Test-of-Time Award.