ECE Distinguished Lecture Series

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Tuesday, April 28
10:30 AM • MSEE 112

Securing the Foundations of the Cloud

Abstract
Modern computing systems—from web services to large-scale AI—depend on cloud infrastructure to provide performance, scalability, and isolation. Despite its importance, much of this infrastructure is built on software that is ultimately taken on trust - even as it is increasingly written using AI. We test it, patch it, and rely on it — but we rarely have strong guarantees that it is actually correct.

In this talk, I will show how we can make this foundation more secure on Arm-based platforms, which are increasingly deployed end-to-end from mobile devices to the cloud. By reducing the trusted computing base, formally verifying key security properties, and automating that process so it scales to real system software, we can begin to replace trust with machine-checked guarantees.

Bio
Jason Nieh is Professor of Computer Science and Co-Director of the Software Systems Laboratory at Columbia University. Technologies he developed are widely used in major operating system platforms, including Android and Linux, the largest cloud infrastructure providers, including Amazon Web Services and Google Cloud, and Arm processors, billions of which ship each year. He has published over a hundred peer-reviewed papers, several of which have received best paper and test of time awards, from MobiCom, OSDI, SIGCSE, SIGMETRICS, and SOSP. Nieh is a Fellow of the AAAS, ACM, IEEE, and John Simon Guggenheim Memorial Foundation. He earned his B.S. from MIT and his M.S. and Ph.D. from Stanford University, all in Electrical Engineering.

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Zoom: https://purdue-edu.zoom.us/j/93626510333

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