



Electrical & Computer Engineering

FLORIDA INTERNATIONAL UNIVERSITY

Invited Speaker Series



Dr. Tilman Wolf

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Attacks and Hardware Defenses for Network Infrastructure

Friday, November 3 | 10 am - 12 pm

Florida International University | Engineering Center 3930

Abstract

The functionality of routers inside the Internet continues to grow and already includes complex protocol processing operations for content adaptation, security, and network management. In the future Internet, this diversity of functionality will expand to encompass the entire protocol stack. Implementing such network customization fundamentally requires programmability in the data plane and multi-core embedded processor systems that can perform packet processing at high data rates. In this presentation, I will discuss my research group's recent work that illustrates the challenges in providing security in these systems. I will provide an example that shows how vulnerable packet processors can be attacked through the data plane of the network. Using hardware monitors, my team has developed an effective defense mechanism against such attacks. I will explain how this work is also applicable to securing general-purpose embedded processing systems.

Bio

Dr. Tilman Wolf is Professor of Electrical and Computer Engineering and Senior Associate Dean of Engineering at the University of Massachusetts Amherst. He is engaged in research and teaching in the areas of computer networks, computer architecture, and embedded systems. He was lead principal investigator on the ChoiceNet project, one of five large NSF Future Internet Architecture (FIA) projects. He is co-author of the book "Architecture of Network Systems" and has published extensively in peer-reviewed journals and conferences. His research has been supported by grants from NSF, DARPA, and industry. He is a senior member of the IEEE and the ACM, and an IEEE Distinguished Lecturer.