

# **Abell Distinguished Lecture in Computer Engineering**

**in conjunction with the  
Electrical and Computer Engineering Department and  
Computer Science Department Seminar Series**



**Dr. Bharat Bhargava**

CERIAS Security Center  
Department of Computer Sciences  
Purdue University

**“Detecting Service Violation in Internet  
and Mobile Ad Hoc Networks”**

**Monday, September 14, 2009**

Reception: 10:30 a.m.

Lecture: 11:00 – 12:00 a.m.

Location: CS 130

## **ABSTRACT**

Networks are vulnerable to attacks from users and malicious hosts. For the internet, we present monitoring schemes based on low cost probes that use only edge to edge measurements. These schemes are scalable in large network domains. Stripes and overlay-based schemes are used to infer delay and loss at egress routers and detect congestions and misbehaved flows due to Service Level Agreement (SLA) violations. Experimental study measures overheads, delays, loss ratio, accuracy, and convergence time. Research results provide guidelines that allow in integrating schemes that can deal with intrusions and preserve QoS. Filters at ingress routers are used to block violating flows.

In ad hoc networks, malicious attackers can prevent the integrity of the route establishment. The research challenge is to identify and isolate the attackers. The malicious hosts may be included in suspicious lists or blacklists depending upon trust and global information. Experimental studies measure effectiveness, accuracy, overhead, and throughput of a Reverse Labeling Restriction (RLR)

Wormhole attacks, authentication, and privacy research will be briefly presented. This talk is based on joint work with A. Habib, Y. Lu, and W. Wang.

## **SPEAKER BIOGRAPHY**

Bharat Bhargava is a professor of the Department of Computer Science with a courtesy appointment in the School of Electrical & Computer Engineering at Purdue University. Professor Bhargava is conducting research in security and privacy issues in distributed systems. This involves host authentication and key management, secure routing and dealing with malicious hosts, adaptability to attacks, and experimental studies. Related research is in formalizing evidence, trust, and fraud. In the 1988 IEEE Data Engineering Conference, he and John Riedl received the best paper award for their work on "A Model for Adaptable Systems for Transaction Processing." Professor Bhargava is a Fellow of the Institute of Electrical and Electronics Engineers and of the Institute of Electronics and Telecommunication Engineers. In 1999, he received the IEEE Technical Achievement Award for a major impact of his decade long contributions to foundations of adaptability in communication and distributed systems. He has been awarded the charter Gold Core Member distinction by the IEEE Computer Society for his distinguished service. He received Outstanding Instructor Awards from the Purdue chapter of the ACM in 1996 and 1998. In 2003, he was inducted in the Purdue's Book of Great Teachers. He also served the IEEE Computer Society on Technical Achievement award and Fellow committees. Professor Bhargava is the founder of the IEEE Symposium on Reliable and Distributed Systems.

**To arrange a meeting with the speaker**, please contact H.J. Siegel at (970) 491-7982 or HJ@ColoState.edu.