



# Fall 2011 Colloquium

## Temple University

### Computer and Information Sciences

### ***MobilityFirst: A Robust and Trustworthy Mobility-Centric Architecture for the Future Internet***

#### **Distinguished Speaker**

**Dipankar Raychaudhuri**

**WINLAB, Rutgers University**

**Friday, 11/11, 2:30pm, Wachman 1015D**

**Abstract:** Wireless and mobile devices are proliferating at a remarkable rate, and will inevitably have a significant transformative effect on the architecture of the global Internet. In this talk, we consider several emerging wireless scenarios (hybrid 4G/WLAN, ad hoc/mesh, vehicular, pervasive) and identify related new protocol and network service requirements. This is followed by an overview of a clean-slate mobility-centric Internet architecture (called "*MobilityFirst*") currently under investigation at Rutgers and collaborating institutions under NSF's new FIA (Future Internet Architecture) program. The *MobilityFirst* network is designed to efficiently handle emerging requirements such as resilience against wireless channel impairments and disconnections, user and network mobility at scale, multicast or multipath routing, content caching and retrieval, and enhanced security/privacy. Key protocol components of the proposed architecture are introduced along with example evaluation results from work-in-progress - these include name/address separation, fast global name resolution service, storage-aware routing with disconnection tolerance, hop-by-hop transport, and content- or context-aware services. The talk concludes with a brief discussion on open/programmable wireless networking platforms and testbeds (ORBIT, GENI) which are being built to validate such next-generation mobile Internet concepts.

**Bio:** Dipankar Raychaudhuri is Professor-II, Electrical & Computer Engineering and Director, WINLAB (Wireless Information Network Lab) at Rutgers University. As WINLAB's Director, he is responsible for an internationally recognized industry-university research center specializing in wireless technology. WINLAB's current research scope includes topics such as RF/sensor devices, cognitive radio, dynamic spectrum access, 4G systems, wireless security, future Internet architecture, and pervasive computing. His research group at WINLAB has been working on design and implementation of next-generation wireless networks covering a number of emerging usage scenarios such as ad hoc mesh, vehicular, cognitive radio, 4G and mobile Internet. He is the principal investigator for several large projects funded by the US National Science Foundation (NSF) including the "ORBIT" open-access next-generation wireless network testbed, and the "*MobilityFirst*" future Internet architecture (FIA) project. He also helped to initiate the ongoing GENI program for deployment of a global-scale experimental infrastructure for Internet research, and is currently leading the "Open GENI Base Station" project aimed at deploying programmable 4G wireless networks at several university campuses across the US.



He has previously held progressively responsible corporate R&D positions in the telecom/networking industry including: Chief Scientist, Iospan Wireless (2000-01), Assistant General Manager & Dept Head-Systems Architecture, NEC USA C&C Research Laboratories (1993-99) and Head, Broadband Communications Research, Sarnoff Corp (1990-92).

Dr. Raychaudhuri obtained his B.Tech (Hons) from the Indian Institute of Technology, Kharagpur in 1976 and the M.S. and Ph.D degrees from SUNY, Stony Brook in 1978, 79. He is a Fellow of the IEEE.