

## EE Department Seminars

September 6, 2010, Monday, 2 p.m.  
Yorgo Istefanopulos Meeting Lounge (KB 217)

### **Implementing an Opportunistic Content Distribution Systems**

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### **A Future Wireless Internet Beyond Generations**

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#### **Abstract:**

### **Implementing an Opportunistic Content Distribution Systems**

In this work we present a middleware architecture for a mobile peer-to-peer content distribution system. Our architecture allows wireless content dissemination between mobile nodes without relying on infrastructure support. Contents are exchanged opportunistically when nodes are within communication range. Applications access the service of our platform through a publish/subscribe interface and therefore do not have to deal with low-level opportunistic networking issues or matching and soliciting of contents. Our architecture consists of three key components. A content structure that facilitates dividing contents into logical topics and allows for efficient matching of content lookups and downloading under sporadic node connectivity. A solicitation protocol that allows nodes to solicit content meta-information in order to discover contents available at a neighboring node and to download content entries disjointedly from different nodes. An API that allows applications to access the system services through a publish/subscribe interface. We describe the design and implementation of our architecture on Google's Android platform and discuss potential applications along with presenting evaluation results from profiling of our system.

### **A Future Wireless Internet Beyond Generation**

The use of licensed spectrum for wireless communication is driven by the need to control interference between operators. This regulation leads to inefficient utilization of spectrum and causes shortage of free spectrum that hinders the entry of new operators and introduction of new wireless technologies. In this work, we present an evolutionary model for which license-free operation is the spectrum sharing mode so that

networks can be built freely by anyone and new technologies can be deployed as soon as they become available. The paradigm assumes users to have open access to all public networks without prior contracts with operators. Hence, freely roaming users will drive competition among wireless network access providers, who in turn can meet demand quickly by offering access at low price, high quality, in hitherto uncovered areas, and by means of novel superior technology. We present a straw-man design and discuss the inherent technical challenges that must be addressed.

## Short Bio:

Emre Altug Yavuz (S'94) received his B.Sc. and M.A.Sc. degrees in Electrical& Electronics Engineering from Orta Dogu Teknik Universitesi (ODTU) - Ankara, Turkey - in 1995 and 1998, respectively. From 1999 to 2001, he was a Software Engineer with Alcatel (Toronto, Canada) developing safety critical real-time microprocessor firmware for embedded command, control, and communication applications in automated train systems. He received his Ph.D. degree at the Department of Electrical& Computer Engineering in The University of British Columbia - Vancouver, BC, Canada - in 2007. He worked as a technical consultant in Vancouver from 2007 to 2009 prior to joining the School of Engineering at the Royal Institute of Technology (KTH) - Stockholm, Sweden - as a post-doctoral fellow. His research interests include open spectrum access, delay-tolerant networks, wireless content distribution, mobility modeling, admission and congestion control, performance analysis, voice and data traffic modeling in cellular and wireless networks.