Who: ***Emina Soljanin, Professor, Rutgers Univeristy***
When: ***Thursday, December 8 at 11 a.m.***
Where: ***ECE202***

Cloud Storage Space vs. Download Time for Large Files

Users of cloud systems demand that their data be reliably stored and quickly accessible. Cloud providers today strive to meet these demands through over-provisioning: keeping processors ready to go at all times and replicating data over multiple servers. Special erasure codes have been designed and adopted in practice as a more storage-efficient way to provide reliability. We will show how coding reduces download time of large files, in addition to providing reliability against disk failures. For the same total storage used, coding exploits the diversity and parallelism in the system better than today's replication schemes, and hence gives faster download. We will introduce a fork-join queuing framework to model multiple users requesting their data simultaneously, and demonstrate the trade-off between the download time and the amount of storage space. At the end, we will mention several problems that arise in distributed systems when the stored data is large, changing, and expanding.

Bio

Emina Soljanin is a Professor at Rutgers University. Before moving to Rutgers in January 2016, she was a (Distinguished) Member of Technical Staff for 21 years in the Mathematicas Sciences Research of Bell Labs. She works as an information, coding, and, more recently, queueing theorist. Her interests and expertise are wide. Over the past quarter of the century, she has participated in numerous research and business projects, as diverse as power system optimization, magnetic recording, color space quantization, hybrid ARQ, network coding, data and network security, and quantum information theory and networking. Dr. Soljanin served as the Associate Editor for Coding Techniques, for the IEEE Transactions on Information Theory, on the Information Theory Society Board of Governors, and in various roles on other journal editorial boards and conference program committees. She is a co-organizer of the DIMACS 2001-2005 Special Focus on Computational Information Theory and Coding and 2011-2015 Special Focus on Cybersecurity. She is IEEE Fellow, member of AMS, AWM, and currently serves as a Distinguished Lecturer for the IEEE Information Theory Society.