

**THE DEPARTMENT OF COMPUTER SCIENCE & THE COMPUTER SCIENCE  
GRADUATE STUDENT ORGANIZATION (GSOCS) PRESENT**

## **INVITED SPEAKER SERIES**

**Professor Prashant Shenoy  
University of Massachusetts**

**Monday, October 30<sup>th</sup> at 12 noon, Room: UU 206**

### **Designing Systems and Applications for Transient Computing**

**Abstract:** Traditional distributed systems are built under the assumption that system resources will be available for use by applications unless there is a failure. Transient computing is a new phenomenon that challenges this assumption by allowing system resources to become unavailable at any time. Transiency arises in many domains such as cloud computing--in the form of revocable spot servers--and in data centers that rely on variable electricity prices or intermittent renewable sources of energy. Transiency is inherently different from fault tolerance since resources do not fail, rather they become temporarily unavailable, and traditional fault tolerance mechanisms are not suitable for handling transient resource unavailability.

In this talk, I will discuss how systems and applications need to be rethought to run on transient computing systems. I will first describe a system called Yank that uses a new bounded-time virtual machine migration mechanism to handle transiency at a system level while being transparent to applications. I will then discuss how modern distributed applications can be made transiency-aware and present a Spark-variant called Flint that we have developed to exploit transient cloud computing. I will end with open research questions in this area and directions for future work.

**Bio:** Prashant Shenoy is currently a Professor and Associate Dean in the College of Information and Computer Sciences at the University of Massachusetts Amherst. He received the B.Tech degree in Computer Science and Engineering from the Indian Institute of Technology, Bombay and the M.S and Ph.D degrees in Computer Science from the University of Texas, Austin. His research interests lie in distributed systems and networking, with a recent emphasis on cloud and green computing. He has been the recipient of several best paper awards at leading conferences, including a Sigmetrics Test of Time Award. He serves on editorial boards of the several journals and has served as the program chair of over a dozen ACM and IEEE conferences. He is a distinguished member of the ACM and a fellow of the IEEE.