CS467 - Mobile and Sensor Data Management

Instructor – Dr. Sanjay Madria, CS Dept., Missouri S & T

Class Timings/Place – Thursday, 4.00 PM to 6.30 PM

Office Hours – Wed/Th – 10.30 to 11.30 and other time by appointments

Prerequisites: Good knowledge of distributed systems/OS/DBMS is required.

- **Synopsis**: The subject will provide students with fundamental and theoretical foundation of mobile computing systems. Specific topics will include: architectures of mobile computing systems; Mobile–IP, resource management and support in mobile computing systems; location data management, broadcasting scheduling and indexing mechanisms; replication/caching in mobile systems, transaction management, failure recovery, fault tolerance and reliability of mobile computing systems, protection and security of mobile computing systems, mobile adhoc and sensor routing schemes, advanced mobile computing applications and the research trends in mobile computing.

**Grading Policy**

- Term Project – 30 %- It is a group project with two parts: Part 1 will be a survey of the research in the particular area selected. Part 2 should be a research proposal sufficiently in detail to give an indication that the student knows how to solve the problem and must provide some overview solution/prototype of the suggested solution to the problem. Instructor will provide regular feedback during weekly meetings. Maximum 3 members in a group are allowed.
- Exams I (20%)
- Exam II (22%)
- Programming Home works – 25%
- Class Participation – 3 %

**Course Outline**

- Introduction to mobile computing
- Mobile System Architecture, Constraints and System Issues
- Location Data Management and Moving Objects
- Token Ring algorithms in Wireless Environment
- Fault-tolerance and Security Issues in Mobile Ad hoc Networks
- Broadcast Data Management
- Mobile Indexing and Caching
- Mobility and Dynamic Replication Control Protocols
- Routing Protocols in Sensor and Mobile Ad hoc Networks
- Security in Sensor Networks
- Data Streaming in Sensor Networks
Reference Book and Papers

Principal reference:


Suggested Reading List

Overview -- Research Issues


Location Management


Distributed System Issues


**Broadcast**


**Indexing**


**Caching**


**Moving Object Databases**


**Mobile Transaction Processing**

- Mobile Transaction Processing: A Survey,
- www-lsr.imag.fr/Les.Publications/paperBDA.ps.gz
- Sanjay Kumar Madria, **Mohammed Baseer, Vijay Kumar, Sourav S. Bhowmick**: A transaction model and multiversion concurrency control for mobile database systems. *Distributed and Parallel Databases* 22(2-3): 165-196 (2007)
Replication


Mobile Ad Hoc Networks and Sensor Computing

- Routing Algorithms AODV, DSR etc.
- Sensor Networks – Overview and Query Processing, Data Streaming

Case Studies

Rover


Coda


Bayou


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should be referred to Disability Support Services so that appropriate and reasonable accommodative services can be determined and recommended. Disability Support Services is located in 204 Norwood Hall. Their phone number is 341-4211 and their email is dss@mst.edu. Instructors may consider including the following statement on their course syllabus as a means of informing students about the services offered:

"If you have a documented disability and anticipate needing accommodations in this course, you are strongly encouraged to meet with me early in the semester. You will need to request that the Disability Services staff send a letter to me verifying your disability and specifying the accommodation you will need before I can arrange your accommodation."

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  Page 30 of the Student Academic Regulations handbook describes the student standard of conduct relative to the System's Collected Rules and Regulations section 200.010, and offers descriptions of academic dishonesty including cheating, plagiarism or sabotage. Additional guidance for faculty, including a description of the process for dealing with issues related to academic dishonesty, is available on-line at [http://ugs.mst.edu](http://ugs.mst.edu).