COT 6617 - Distributed Systems Design

• Catalog Description:

Prerequisite: A high-level programming language, basic knowledge of architecture and operating systems, elementary discrete mathematics, or permission of the instructor. We consider a distributed computer system that consists of multiple autonomous processors that do not share primary memory but cooperate by sending messages over a communication network. Discussion of special problems related to distributed control such as election and mutual exclusion, routing, data management Byzantine agreement, and deadlock handling.

• Textbook:

1. Distributed System Design

• References

1. Distributed Algorithms
2. Distributed Systems: Principle and Paradigms

• Instructor:

Dr. Jie Wu, Professor of Computer Science and Engineering
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• Goals: The student will get exposed to fundamental issues in distributed system design, recent development, and research trends in this area.

• Class time: T-TH 11: 00 AM - 12:20 PM

• Office hours: T-TH 8:30 AM - 11:00 AM S&E 410

• Prerequisite by topic:

1. Basic concepts of computer architecture and operating systems
2. Knowledge of a high level programming language
3. Elementary discrete mathematics

• Topics:

1. Introduction and motivation
2. Program languages and clock synchronization
3. Event ordering and clock synchronization
4. Election and mutual exclusion
5. Byzantine agreement
6. Distributed faults and termination detection
7. Distributed data management
8. Distributed operating systems: deadlock handling
9. Topics in distributed communication protocols: routing, broadcasting
10. Topics in distributed shared memory, database, and file systems