

Syllabus



CMPT 865 Syllabus (2013-2014)

COURSE INFORMATION AND POLICIES

RESOURCES

Readings

Title: Research Literature
 Additional information: none
 Type: Required resource

Title: other research literature, as assigned
 Additional information: none
 Type: Required resource

COURSE REQUIREMENTS

Course Goals

This course deals with techniques/issues relating to parallel and distributed systems. In addition to reviewing the fundamental concepts of the field through readings/discussions, it will emphasize practical experience through case studies and implementation projects.

You will be expected to participate actively in class discussion, do independent reading, and lead in-class discussions of this reading. There will be no programming assignments, though I expect some programming in the implementation project.

The 4 main topics to be covered all concern time-sensitive issues: Multimedia distribution and streaming (focus on network communication and organization), Sensor networks, Multicore Architectures and Networked Games.

Course Requirements

Requirements:

Course Project Implementation	30%
Course Project Research	25%
Paper Summaries	15%
Paper Presentations/Discussion Leading	20%
Participation/Discussions	10%

LESSONS

Lesson 1

Multi-core Architectures

Objectives: This will be the first topic of the course. We will discuss the protocols with respect to multicore computers. Many aspects of this processor architecture have distributed system components, with regard to communication and consistency between the cores, as well as the functionality designated to the cores.

Topics:

- Architectures
- OS Design
- Cache Coherence
- Energy Efficiency
- Performance
- Coordination/Communication
- Programming Model
- Applications and General Research Issues

January 9, 2014

10:00 AM - 11:30 AM

Lesson 2

Mesh and Sensor Networks

Objectives: This will be the second topic of the course. We will discuss the protocols with respect to networks of small sensor devices and the applications and configurations that make them work. As well, we will discuss mesh networks.

Topics:

- MAC Layer
- Routing
- Energy Consumption
- Congestion Control
- Aggregation/Coordination
- Development Environments/Operating Systems
- Security

January 30, 2014

10:00 AM - 11:30 AM

Lesson 3

Network Games

Objectives: The third component of the course. We will explore the facilities necessary to provide efficient communication and structure for networked games and gaming environments.

Topics:

- Mobile/Wireless
- Scalability
- Traffic Analysis
- Network Effects on Games – reliability, latency
- Fairness/Quality of Service

February 25, 2014
10:00 AM - 11:30 AM
Lesson 4

Multimedia Protocols/Systems

Objectives: This will be the last 3 weeks of the course. We will be discussing the development and utilization of protocols and systems for real-time delivery of media data.

Topics:

- Streaming
- P2P Streaming
- Storage Systems
- Compression
- VOIP
- Video Conferencing
- Remote Video Editing
- Network Music

March 18, 2014
10:00 AM - 11:30 AM