Syllabus: COSC 6260 — Advanced Algorithms

Fall Semester 2022

Instructor: Thomas Schwarz, sj

Website: https://tschwarz.mscs.mu.edu/Classes/AAF2022/index.html

Literature

- Cormen, Leiserson, Rivest, Stein: Introduction to Algorithms, MIT Press, (any edition)
- Herlihy, Shavit, Luchangco, Spear: The Art of Multiprocessor Programming, Morgan Kaufman (2nd edition)[1]
- Original articles in Algorithms and Data Structures, available via Google's Scholar search engine. For accessibility, you might need to have a campus IP address.

Contents

- Algorithms and Computer Architecture
- Correctness and Loop Invariance
- Divide and Conquer Algorithms
- Dictionary Data Structures: B-trees, Linear Hashing, Log-trees, Fibonacci Heaps
- Multiprocessor programming
  - Locks
  - Consensus
  - Thread-safe algorithms
- Amortized Analysis
- Graph Algorithms

Learning Objectives:

- Capability to analyze performance of algorithms
- Capability to analyze an algorithm for correctness
- Capability to review and summarize academic papers.

Grading:

Grading is based on the following components.

Quizzes	20%
Precis / Related Work	20%
Homeworks	30%
Final	30%

[1] The first edition is good enough and available at https://cs.ipm.ac.ir/asoc2016/Resources/Theartofmulticore.pdf.

Quizzes and homeworks are administered via D2L. Only submissions in PDF are accepted. Final Examination will be conducted only online.

Synchronous Long Distance Classes

Because I will be using a pencil on occasion, I have to use my own system, which has had difficulties in the past with zoom. You will have to use a microphone and a web-camera.

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Join Zoom Meeting
https://us02web.zoom.us/j/81258461828?
pwd=WElTYlJxRU8ybkhONyt6ZXlFOEZhUT09

Meeting ID: 812 5846 1828
Passcode: 834069
One tap mobile
+13126266799,,81258461828#,,,,*834069# US (Chicago)
+16465588656,,81258461828#,,,,*834069# US (New York)

Dial by your location
        +1 312 626 6799 US (Chicago)
        +1 646 558 8656 US (New York)
        +1 301 715 8592 US (Washington DC)
        +1 346 248 7799 US (Houston)
        +1 669 900 9128 US (San Jose)
        +1 253 215 8782 US (Tacoma)
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Class Policies:

You are expected to take part in every class. As according the federal guidelines "merely logging in" is not considered to count as a class attended, you will have to participate in the quizzes in order to have "attended class". According to Marquette policies, I will have to dis-enroll you if you are missing more than two weeks worth of classes.

Because the class is already given in a synchronized manner, you are encouraged to attend via zoom if you feel sick. Please participate in the "know your neighbor" policy of Marquette.