COSC 6320 Advanced Data Structures and Algorithms
Instructor: R.M. Verma, Office: PGH 532, Tel: 3-3348.

Textbook


References


Goals

- To provide computer science graduate students with a broad and deep understanding of the design and worst-case analysis of advanced data structures and algorithms including: sorting, selection, data structures for disjoint sets, binomial trees, graph algorithms, etc. To expose the students to hard problems and the theory of NP-completeness.

Topics

- Mathematical Foundations including Summations and Recurrences
- Sorting and Selection.
- Advanced Techniques (dynamic programming, greedy algorithms, amortized analysis)
- Data Structures for Disjoint Sets
- Graph algorithms
- Selected Symbolic computing algorithms (if time permits)
- NP-completeness
- Approximation Algorithms (as time permits)

Grading (subject to change): Class participation 3%, Homeworks 10%, Quiz 1 12%, Quiz 2 15%, Quiz 3 18%, Final 36%, Presentation/Writeup 6%. Homeworks will consists of two types of exercises: practice exercises, which must be done completely on your own and Problems Sets, on which you may collaborate with other people in this class only. You will be given 4-5 minutes for a brief update on the current status of a problem or algorithm discussed in class and you will turn in a 1-page write up on it with references in MLA format.

TA: Bangsheg Sui (suibangsheng@gmail.com) Office: PGH 313; Office Hours: Tu. 2.30-4.30pm
Academic Honesty Policy: No collaboration is allowed on practice exercises, exams and any programming assignments (yes, that excludes the internet as well - no searching for solutions on Internet and no posting of problems on Internet). The appropriate help of the instructor and the TA is of course allowed and encouraged. Do not expect us to debug your solutions for assigned exercises and problems. You are always welcome to discuss your work on exercises and problems that are not similar to the ones assigned.