CSCE 500

Design and Analysis of Algorithms

Fall 2018

August 20, 2018

Instructor: Nian-Feng Tzeng
Office: Rm. 454 CC (× 2-6304)
Class meeting: MW 10:30 – 11:45, OLVR 113

Textbook and Supplemental Materials:

1. Introduction to Algorithms, Third Edition, by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, and Clifford Stein, The MIT Press, 2009, ISBN: 978–0–262–03384–8.
2. Published articles supplemental to covered topics.

Course Description:

This course provides a comprehensive coverage of modern computer algorithms, aiming at in-depth treatment of algorithmic design and analysis with elementary explanation while keeping mathematical rigor. Based on the textbook of "Introduction to Algorithms", this class covers the topics listed below in sequence.

(1) Foundations.
(2) Data Structures – hash tables, trees, heaps.
(3) Design and Analysis Techniques – dynamic programming, greedy algorithms, amortized analysis.
(4) Graph Algorithms – spanning trees, shortest paths, maximum flow.
(5) Selected Topics – NP-completeness, approximation algorithms, multithreaded algorithms, string matching.

Each covered topic starts with the description of pertinent algorithms in English and/or in the pseudocode(s), followed by their careful complexity analyses.

Course Requirements:

1. Homework (10%)
2. Midterm exams (2) (50%)
3. Final exam (comprehensive) (40%)