Data Structures
資料結構

Course Objective

This course will give a brief introduction to fundamental data structures that can be applied to many algorithms for solving difficult problems in the area of industrial engineering with applications. We analyze the performance of such data structures from both theoretical and practical perspectives.

Contents

- *Concept of Algorithms
- *Performance Analysis
- *Arrays and Structures
- Matrix Operations
- *Stacks and Queues
- *Linked Lists
- *Trees and Tree Traversals
- *Heaps and Binary Search Trees
- *Graphs and Graph Search
- *MST and Shortest Paths
- Hashing
- Selected Topics

Textbooks

- E. Horowitz, S. Sahni, and S. Anderson-Freed, Fundamentals of Data Structures in C, 2nd Edition, Silicon Press, 2008
- T.H. Cormen, C.E. Leiserson, R.L. Rivest, C. Stein. Introduction to Algorithms, MIT Press, 2009.

Grading

Assignments	40% (Implementation)
Midterm Exam	20% (Cover basic topics)
Final Project	20% (Teamwork projects)
Final Exam	20% (Cover advanced topics)