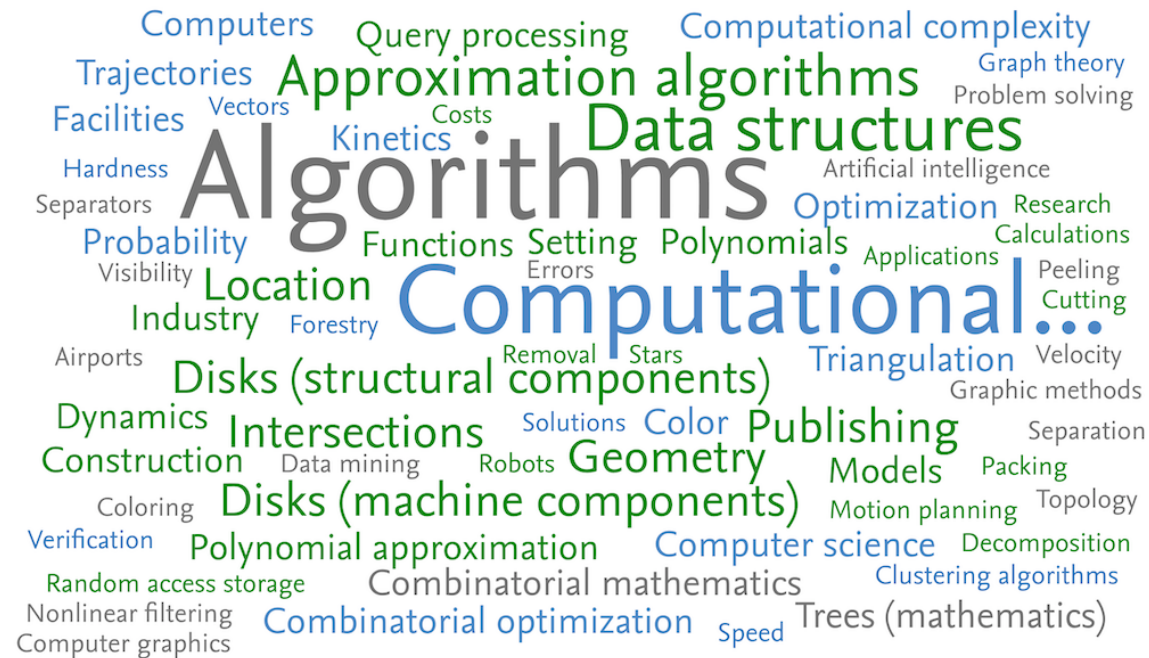


CSED331 Algorithms

Spring 2023



Hee-Kap Ahn

Graduate School of Artificial Intelligence

Dept. Computer Science and Engineering

Pohang University of Science and Technology (POSTECH)

Course Information

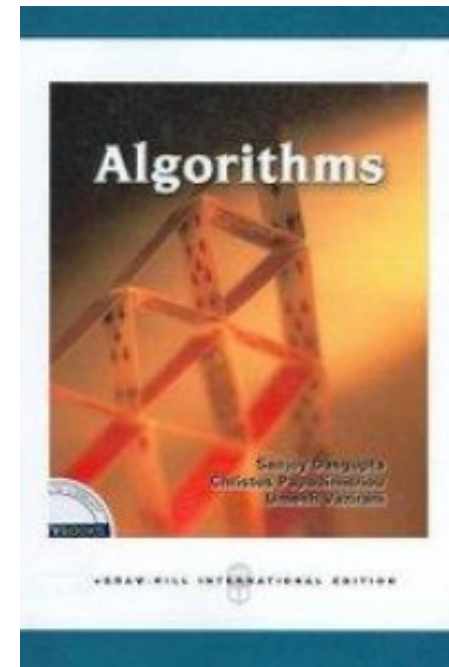
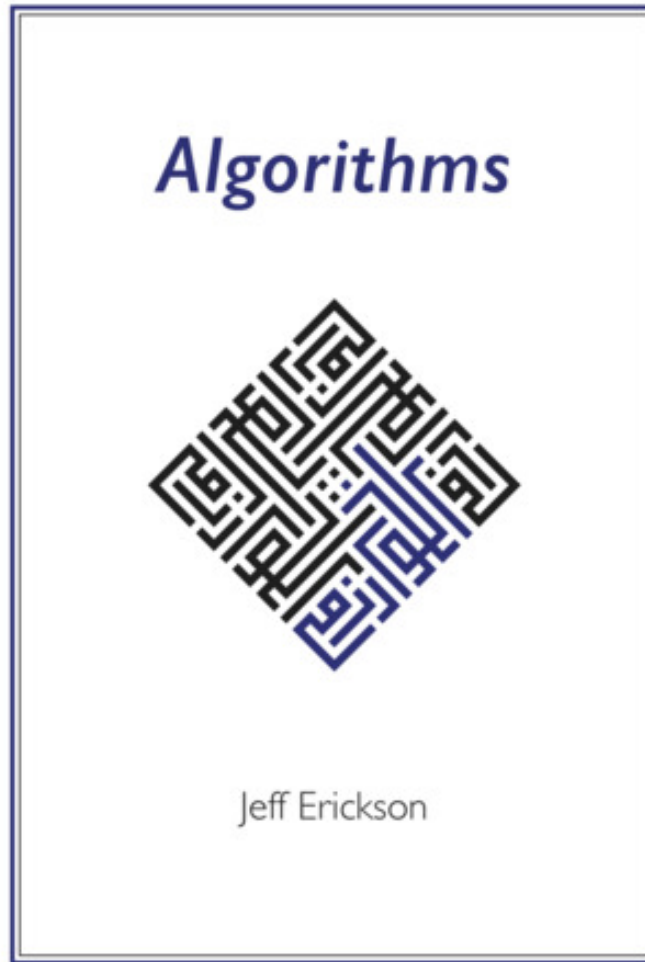
- Lecturer : Hee-Kap Ahn (B2-233)
- Lectures : 09:30 - 10:45, Every Monday & Wednesday
TJ Park Library - room 502
- Slides can be found at PLMS.
- Contact by email

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- Teaching Assistants:
 - Byungook Kang 강병욱 (kbu417@postech.ac.kr)
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 - Chaeyoon Chung 정채윤 (chaeyoon17@postech.ac.kr)



Course Information



Available at

<http://jeffe.cs.illinois.edu/teaching/algorithms/book/Algorithms-JeffE.pdf>

Lectures

Algorithms are procedures or methods that solve problems arising across the full range of computing applications.

The goal of this course is to understand

1. how to formulate problems, and from this,
2. how to design efficient algorithms for the resulting problems.

The course starts with an introduction to algorithms. Then we study four essential algorithm design techniques: greedy algorithms, divide and conquer, dynamic programming, and network flow.

We will also spend a few weeks on computational intractability and techniques for dealing with computational intractable problems.

We will look at algorithmic problems illustrating the main theme of each topic.

Algorithms course for POSTECHians.

1st half

- Week 1 : Introduction, Efficiency
- Week 2 : Recursion
- Week 3 - 4 : Backtracking
- Week 5 - 6 : Graph algorithms
- Week 7 - 8 : Greedy Algorithms
- Week 8 : Midterm exam.

2nd half

- Week 9 - 10 : Dynamic programming
- Week 11 : Linear programming & Maximum flows
- Week 12 - 13 : Computational intractability
- Week 14 : Local search heuristics
- Week 15 : Approximation algorithms
& Randomized algorithms
- Week 16 : Final exam.

Homework

A few **take-home problems** will be given at the end of each topic.

- Students can get homework points by
 - submitting their solutions until the deadline,
 - participating in homework review sessions.
- Solutions must be done by your (digital) handwriting.
- No submission allowed after the deadline.
- Group discussion is *encouraged* under the following condition:
 - A group of 2-3 students can work together on a problem.
 - Each student must write his/her own solution to the discussed problem.

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Problem Solving.

- There will be programming homeworks roughly every two weeks.
- Submission: DOMjudge.

Course Schedule

We will have lectures on every Monday and Wednesday.

- Midterm exam (tentative): April 3 (paper-based) & 5 (programming)
- Final exam (tentative): May 29 (paper-based) & 31 (programming)

Grading policy.

- Midterm 30%, Final exam. 30%
- Homework 20%
- Problem solving (programming, project) 20%