

CS 612 – Algorithms for Electronic Design Automation Fall 2015

Instructor: Mustafa Ozdal (EA-420)

Schedule: Tue. 10:40-12:30 EA502
Thu. 9:40-10:30 EA502

Course webpage: www.cs.bilkent.edu.tr/~mustafa.ozdal/cs612

Textbook: A. B. Kahng, J. Lienig, I. Markov, J. Hu, “*VLSI Physical Design: From Graph Partitioning to Timing Closure*”

Grading:

Midterm (take home): 30%
Attendance and participation: 20%
Project: 50% (20% presentation + 30% report)

Course Description

Applied algorithms for the problems encountered in the field of computer-aided design. Algorithmic techniques such as KL/FM-based graph partitioning, simulated annealing based optimization, shortest path algorithms, Steiner tree minimization techniques. Application of these algorithms to solve some of the real-world problems encountered during physical design of large scale chips (e.g. partitioning, floorplanning, placement, and routing problems).

Course Project

Students are expected to work on an Electronic Design Automation (EDA) problem. The project will consist of two parts: presentation and final report. The presentation is expected to cover a literature survey for the chosen problem plus the project plans (i.e., what to implement, which experiments to perform, etc.). The final report is expected to summarize the project, present experimental results, and some conclusions.

Course Contents

- Background and Introduction
- Partitioning
- Floorplanning
- Placement
- Topology Generation
- Global Routing
- Network Flow Based Algorithms
- Research Paper Discussions