Topics

Each topic will cover a problem area, along with associated algorithms and applications.

- Problem: Input/Output specification
- Algorithm: Method of solving a problem
- Application: A use of a problem
- Problem area: A set of related problems

What the class will cover

Application areas that use sophisticated algorithms

Many algorithms

The transition from theory to practice

Various considerations and tradeoffs in algorithm design and deployment

- time vs. quality
- generality
- characterizing the input
- trust and momentum

Benchmark Suites

Expected background

- Asymptotic analysis (solving recurrences, NP-complete problems)
- Graph terminology and algorithms (e.g. min-spanning-tree and max-flow algorithms)
- Dynamic programming
- Balanced trees (e.g. splay trees or 2-3 trees)
- Fast fourier transform

Requirements and Grades

Requirements

- Readings (many from the web, I'll hand out the rest)
- Assignments
- Take-home open-book final

Grades

- 60% Assignments
- 40% Final

Topics (approximate dates)

- Compression (Aug 29, Sept. 3, 5)
- Cryptography (Sept. 10, 12, 17)
- Linear Programming (Sept. 19, 24, 26)
- Integer Programming (Oct 1, 3)
- Triangulation and Meshing (Oct 8, 10, 15)
- Nbody Simulation (Oct 17, 22)
- VLSI Layout (Oct 24, 29, 31)
- Pattern Matching (Nov 5, 7)
- Indexing and Search Engines (Nov 12, 14, 19)
- Clustering (Nov 21, 26)

Course: *Algorithms in the Real World (CS294-3)*

Instructor: *Guy Blelloch (visiting from CMU)*
Soda 615

Times: *Wednesdays and Fridays, 12:30-2:00*

URL: *http://http.cs.berkeley.edu/~guyb/algs.html*

Yes, this course does cover the "theory" prelim breadth requirement.