

600.271 Automata & Computation Theory

Instructor

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NEB 312
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Grading

One Assignment/week (20% of the grade)
The lowest score will be dropped
Two Midsemester Examinations (25% of the grade per exam)
Final Examination (30% of the grade)

First Midsemester examination (Thurs) 03/08/2012

Second Midsemester examination (Thurs) 04/12/2012

Final examination (Thurs) 05/10/2012, 2-4:30 pm

TA and CAs

TA: Tuo Zhao:
CAs:
Juneki Hong
Sharon Li
Matt Molisani

Misc

Kosaraju, Voluntary Help Classes:
Tu, Wed: 4:00-5:00pm, NEB 215
TA's office hours: Thurs. 11:00-1:00, Undergrad Lab

Topics

The course emphasizes design aspects rather than detailed proofs of correctness. Of course you need to be able to argue precisely when we cover topics such as pumping lemmas, right congruence lemma, reductions, and polynomial time reductions. The major topics to be covered are:

- Design of fas, pdas, lbas, Turing machines
- Pumping lemmas for fas and pdas
- Right congruence lemma for fas
- Regular Expressions
- Design of grammars (emphasis on Context-free grammars)
- Correspondence between automata and grammars (Not too many proofs)

- Computable problems
- Recursive and recursively enumerable sets
- Decision problems
- Halting Problem
- Undecidability via reduction (emphasis on m-reduction)
- Rice's Theorem
- P and NP classes (equivalence between 2 notions of NP)
- NP-completeness, polynomial time reduction

Reading Material

Class Notes (primary source).

M. Sipser: Introduction to the theory of computation, Thomson Course Technology.

H.R. Lewis and C.H. Papadimitriou: Elements of the theory of computation, Prentice Hall.