

CS590A: Distributed Network Algorithms

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Topics

- Basic Distributed Algorithms
- Routing Algorithms
- Distributed Graph Algorithms
- Distributed Approximation Algorithms
- Locality in distributed algorithms: covers, partitions, and spanners
- Applications to Internet, Peer-to-Peer and Sensor networks

We will look at **Classical**, **Advanced**, and **Current** work on these topics.

References

- Lecture notes and slides.
- Distributed Computing: A Locality Sensitive Approach by David Peleg
- Distributed Algorithms by Nancy Lynch
- Introduction to Distributed Algorithms by Gerard Tel
- Distributed Systems: An Algorithmic Approach by Sukumar Ghosh
- Lecture notes on Algorithms (CS580) — available from my homepage.
- Lecture notes on Randomized Algorithms (CS590R) — available from my homepage.

Grading

Lecture Notes and Class Participation(25%):

- One student nominated to take notes on a topic.
- Complete, clear, and correct.
- Typeset in Latex.
- Two weeks to submit (from the date of the lectures).

Paper Presentation and Discussion (25%):

- Each student will present (one or two) papers in class on a topic of interest here.
- All students (including the presenter) should critique the paper:
 1. What problem does the paper address? What is (are) the main result(s)?

2. What is the previous work and how does this paper improve on these?
3. Key Techniques and proofs.
4. Strengths and weaknesses of the paper.
5. Inspired by this, what open problem(s) that would you solve?

Final Project and Presentation (50 %):

- Theoretical and/or experimental study of significant scope.
- Presentation in class.
- Points depend on creativity, originality, completeness, and presentation.