

CS 525: Advanced Distributed Systems


Spring 2009

(previously CS 598IG)

Tuesdays and Thursdays / 1302 Siebel Center / 9.30 AM – 10.45 AM

Instructor: Dr. Indranil Gupta
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What are the Main Topics?

- I. Distributed Systems Fundamentals
- II. Large Distributed and Peer-to-peer Systems
- III. Large-Scale Sensor Networks
- IV. Cloud Computing 

What do Students Learn in this Course?

- Advanced **grounding** in the theory, practice, design and pragmatisms of distributed systems.
- Study of advanced distributed systems concepts in **breadth and depth**.
- In-depth study and review of about **80 papers in distributed systems**, both classical and contemporary.
- Knowledge of cutting-edge research areas such as cloud computing and wide-area computing (e.g., PlanetLab)
- Design methodologies, e.g., design of practical distributed systems **inspired by natural phenomena**
- Access to testbeds, e.g., OpenCirrus academic cloud at University of Illinois (tentative)
- Chance to **present conference papers** in a friendly environment with peer review.
- **You write your own new conference paper!**

You get to Write Your Own Conference Paper!

Besides advanced study of distributed systems, the course's other goal is to lead you gently, step by step, through the process of writing a conference-quality research paper (perhaps your first!). Projects from previous CS 525/598IG's have been published at top conferences such as ICDCS, Middleware, PODC, Infocom, SASO, MMCN, WORLDS, DSN, MASS (and many more!), as well as top ACM and IEEE journals, e.g., TPDS, TAAS, TOSN, TNSM (and many more!).

Sample List of Topics (partial): Distributed computing theory, probabilistic algorithms, peer to peer systems, cloud computing, sensor networks, the Grid, overlays, routing, handling stress, distributed management, data-intensive programming, membership, classical algorithms, design methodologies, sources of unreliability and trace studies, industrial systems, caching, publish-subscribe, structure of networks, selfish algorithms.

Prerequisites: Operating Systems or Networking or Basic Distributed Systems (ideally CS 425) or equivalent.

Course Website: <http://www.cs.uiuc.edu/class/cs525/>

This course can be taken to satisfy credit requirements for a PhD in the Systems&Networking area.