Self introduction

• Yang Wang (Office DL689)
• Ph.D. from the University of Texas at Austin
• Research interests: distributed systems; fault tolerance; scalability
• How about you?
Topic of this course

How to make multiple machines work together?
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How to make multiple machines work together?

• Consistency: what is the correct behavior?

• Storage: how to protect data from failures?

• Computation: how to split work among machines?

• Industrial systems: how people do it in practice?
Contents not covered

• Networking
  – TCP, congestion control, QoS, ...
• Parallel computing
  – MPI, parallelize specific algorithms, ...
• Security
  – Privacy, confidentiality, ...
• Database
• Virtual machine
Course information

• No textbook. We discuss one paper each lecture.
• http://cse.osu.edu/~yangwang/cse5439.html
• I will present some of the hard ones.
• You each present 1-2 papers.
• “Try to solve it yourself” for a few works:
  – Don’t read the paper before class
  – No one presents it in class
  – Let’s try to solve it in class
Your job

• Read the paper before class when required
  – Submit a critique before class (20%)

• Present 1-2 papers
  – Choose a few candidates and email me. (30%)

• Two course projects (20% + 30%)
• No midterm or exams
Critiques

• Motivation: what is the problem?
• Challenge: why is it difficult?
• Solution: how do the authors solve it?
  – You don’t have to list every detail.
• Evaluation: does the solution work?
• Limitation: what can be improved?
• I may have some specific questions regarding each paper.
Critiques

• Limited to one page (12pt single column):
  – Be concise: it’s challenging
• Turn in hard copies before class
  – Late ones will not be accepted.
• You can skip 3 critiques without penalty
  – Use them wisely for deadlines, conferences, etc
  – You need legitimate reasons to skip more: sickness, family emergencies, etc
Presentations

• Prepare for 35-40 mins of presentation and 15-20 mins of Q/As.

• You may not be able to cover everything in the paper. Choose the important ones.

• You can use slides from authors, but cite them properly.
Projects

• Project 1: system measurement
  – It is a warm-up project teaching you how to measure the performance of a system.
  – One-person project.
  – You need to submit a report.
Projects

• Project 2: two options.
• Option 1: implement a protocol you learned in class
  – 2PC, Paxos, or PBFT
  – One-person project
  – You need to demonstrate your prototype to me at the end of semester
Projects

• Option 2: you can propose a research project
  – Could have two people working together
  – You need to submit a two-page proposal at the end of Feb to tell me what you are going to do
  – You need to present it in class at the end of semester
  – I am OK if you use the same project from another course or from your advisor as long as:
    • It is related to this course
    • Your course instructor or advisor is OK with that.
Projects

• Option 2: you can propose a research project
  – If you are not sure, discuss with me.
  – You don’t have to succeed.
    • If you fail, tell us why it fails and whether there are alternative solutions.
    • If you cannot complete, tell us your partial result and what remains to be done.
  – If result is promising, we can continue working on it into a real paper.