Advanced Computer Networks

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Summer 2007

About the course

- Topics in Advanced Computer Networks
  - a follow-on course after csc450/550
    - take this course if you REALLY like computer networks!
  - lectures: MW 4:30-6pm, ECS130
  - http://www.csc.uvic.ca/~csc485b
    - lectures, course projects, discussion board, etc
  - prerequisites
    - csc450/550, ceng460/elec510, or equivalent

About the course instructor

- Dr Jianping Pan
  - pan@uvic.ca, x5796
  - office hours: MW 2:30-3:30pm, ECS566
    - or by appointments
  - work experience
    - UVic, industry research labs, U Waterloo, ...
  - research area
    - computer networks and distributed systems
    - http://web.uvic.ca/~pan

Course objectives

- "layer 3+, and the control plane of the Internet"

- Selected topics

  - *TCP/IP networking review*

  - overlay network architectures

  - peer-to-peer application models

  - end-to-end control mechanisms

  - inter-domain routing protocols

  - network service provision (IPTV, VoIP, MMOG)

  - network measurement basics

Course materials

- Reading list
  - provided and updated on the course web site

- Reference book
  - **K**urose & **R**oss Computer networking, a top-down approach featuring the Internet, 3rd edition (4th edition is out!)

More resources

- Networking research communities and venues
  - ACM: SIGCOMM conferences and workshops
  - IEEE: INFOCOM, ICNP, GLOBECOM, ICC
  - IETF/IRTF: active working groups in upper layers
  - USENIX conferences and workshops
- Networking research tools and facilities
  - *analysis*
  - simulation, emulation, experimentation
  - measurement

Your participation

- Reading summaries
  - 6 reading summaries (6 * 5%)
  - each for two or three papers
- Student presentations
  - course participation (5%)
  - paper presentation (15%)
  - project presentation (10%)
- Course project (40%)
  - a term-long course project with three checkpoints

Reading summaries

- A lot of reading in this course
  - not (just) learn from textbooks
  - but (also) in their original research papers
    - what great, what not so great, what to be changed
- All read the selected papers in the reading list
- A group of people submit reading summaries
  - individual reading summaries, guideline provided
  - some present the papers, some lead the discussion
- All participate in the discussion

Course project

- csc485b/seng480b

    – a group of no more than two students

- csc586b

    – individual project

- Let me know your project topic before May 18

- Two midterm checkpoints (end of May, June)

- Final deliverables (end of July)

    – project report (design and implementation)

    – project presentation

Your feedback

- Teaching/learning is interactive
  - two-way communications
- Let me know
  - what do you think about lectures, tutorials, labs, projects, exams, topics, …
  - what do you want to know more, probe further
- You can *always* reach me
  - in class, during office hours, by email/phone

Let's know a little bit about you...

- Your name, academic program

- Your interest in computer networks

- Your research interest (csc586b required)

- Other things you want us to know in this course
  - e.g., recruit/attract project group member (csc485b/seng480b optional)

Course policies

- See official course outline
  - late assignments, mark appeals, etc
  - academic integrity
  - accommodation, etc
- Summaries, presentations, project
  - collaboration/participation is encouraged
  - responsibility: your submitted work is yours
    - for undergraduate group project, you need to identify individual's contribution clearly in documentation
  - obligation: give credits to references

This lecture

- An introduction to the course
  - who, when, where, what, and how
  - course objectives, materials, topics
  - you and the course!
- Assignment A0
  - due Friday, May 11th, 2007
  - from you@uvic.ca to pan@uvic.ca
    - Subject: [your_course_number] A0
    - your name, student number, academic program
    - what are your intended paper presentation topics

One more message...

- NSERC Undergraduate Research Awards
  - awards allocated to UVic CS
    - Fall 2007 application deadline: **June 15**
  - get a taste of doing research
    - a good experience before graduation, going to graduate school, or committing to research career
  - impress employers in your resume
    - can be used as Co-op, work term as well
  - some projects
    - http://www.cs.uvic.ca/~pan/usra

Next lecture

- ## Internet design

  - – required reading

    - [CK74] V. G. Cerf and R. E. Kahn, "A Protocol for Packet Network Interconnection". IEEE Transaction on Communications, 22(5), May 1974, pp. 637-648. [TCPdesign]

    - [SRC84] J. Saltzer, D. Reed, and D. Clark, "End-to-end Arguments in System Design". ACM Transactions on Computer Systems, Vol. 2, No. 4, 1984, pp. 195-206. [end2end]

    - [Cla88] D. Clark, "The Design Philosophy of the DARPA Internet Protocols". In Proceedings of ACM SIGCOMM '88, 106-114, Palo Alto, CA, Sept 1988. [IPSdesign]

Reading list

- Will be updated throughout the term
  - http://www.cs.uvic.ca/~pan/csc485/reading.html