CMPE 257: Wireless and Mobile Networks

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Lecture 1

CMPE 257 Spring’19
Welcome to CE 257!

• Class information:
  – When: Tue, Th 1:30-3:05.
  – Where: E2 194
  – Class Web page:
    https://cmpe257-spring19-01.courses.soe.ucsc.edu
About the Instructor

• Katia Obraczka.
  – Office: E2 323.
  – E-mail: katia "at" soe.ucsc.edu

• Lab: Internetworking Research Group (i-NRG): E2 311

• For more info, visit:
  – http://inrg.soe.ucsc.edu
Class Web Page

• Check class Web page frequently!
  – Lecture notes.
  – Readings.
  – Assignments.
  – News.
  – Project information.
Course Focus

• From the Web page:

“This class covers various topics relevant to wireless networking and mobile computing. It focuses on communication protocols for wireless and mobile networks from medium-access control to end-to-end transport and applications…”
Pre-requisites

• CE 252A or equivalent.
• Or instructor’s consent (need permission code).
Audience and Requirements

• Advanced grad class.
• Lots of reading.
  – Research papers
• Programming project: strong programming skills.
• In-class discussions and student participation is a must!
• In-class student presentations.
Course Format

• Lectures + student presentations.
• Material based on research papers.
  – No textbook required.
• In-class discussions are critical.
  – Papers must be read before each class.
• Attendance is mandatory.
  – Students cannot miss more than 2 classes.
  – If a student will be missing a class, they need to let the instructor know in advance.
Grading

• Grades will account for:
  – In-class presentation: 20%
  – Reading reports: 10%
  – Project: 40%
  – Exam: 30%

Disclaimer: Don’t expect “automatic” passing grades!
Student Responsibilities: Academic Integrity

• All work must be individual (unless otherwise agreed with instructor).
  – Academic integrity violations will not be tolerated and may result in automatically failing the class.
  – OK to have discussions on ideas but turn in your own work.
  – Ask instructor if there are any questions.
  – For more info, go to: www.ucsc.edu/academics/academic_integrity/
Student Responsibilities

- Papers to be covered in class must be read before lecture.
- Reading reports: brief summaries of the papers need to be submitted prior to class.
- Have reading reports handy during class to help in discussions.
- Web page must be checked frequently for updates.
Readings

• Bulk of readings based on research papers.

• Reference textbook:

• Other references.
Reading Reports

• Due before class when paper is covered.
• Submit via e-mail.
  – Plain text or pdf attachment.
• Have it handy in class to guide discussion/participation.
Reading Reports

• What is the problem being solved?
• Why is it interesting, relevant, and/or important?
• What approaches existed at the time that this work was done?
• Why existing approaches were not adequate?

• What is the proposed approach and how does it compare to earlier approaches?
• What are the main strengths and weaknesses of the paper/proposed approach?
• Compare and contrast commentary on the papers.
Reading Reports

• Length: 1 page
• Suggestion on how to structure them:
  – Summarize each paper according to the questions in previous slide.
  – Then, compare and contrast papers also using the questions as basis for comparison.

• Goal:
  – Learn how to read research papers and
  – Develop critical perspective.
  – Guide in-class discussion.
Course Outline (tentative)

• Introduction.
• Wireless MAC.
• Network layer issues.
  – Unicast and multicast routing.
  – Wireless internetworking.
• E2E protocols.
Additional Topics

- Mobility characterization and modeling.
- Networking paradigms:
  - DTN.
  - SDN.
  - Hybrid networks.
  - Edge computing
- Security.
- Energy management.
- Topology management.
- IoT
Project

- Project is a major part of the grade.
- Chance to get started in possible thesis research directions.
- List of suggested projects will be provided.
  - Implementation.
  - Simulation.
  - Project suggestions welcome!
    - Need instructor’s approval.
- Project proposal required.
Project Proposal

• Project proposal should contain:
  – Project title.
  – Motivation.
  – Brief description of proposed approach.
  – Basic design.
  – Evaluation and testing methodology.
  – Demo plan.

• Project proposal due by the end of the 3rd week of class.
Student Presentations

• Student presentations will happen later in the quarter, i.e., likely after exam.

• Topics include:
  – Networking paradigms:
    • DTN.
    • SDN.
    • Hybrid networks.
    • Edge computing
  – Security.
  – Energy management.
  – Topology management.
  – IoT
Student Presentations (cont’d)

• Pick topic among suggested topics or propose a new one.
  – If presenting on a new topic, need instructor’s approval.

• Choose 3 papers on the topic.
  – Get instructor’s approval for papers to be covered.
Student Presentations (cont’d)

• Presentations must provide adequate overview of the papers.
  – They should not follow the paper exactly.
• Presentations should also offer insight and critical perspective of the papers/approaches being presented.
• Class discussion should be encouraged.
  – E.g., have questions prepared.
Questions?