

Class Introduction: Mobile and Cloud Computing

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UCL Computer Science



UCL CS M038/GZ06
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Course Staff and Office Hours

- Instructors:



Kyle Jamieson
MPEB 7.02
Thu 4–5:30 PM
ext. 31390



Brad Karp
MPEB 7.05
Wed 4–5:30 PM
ext. 30406

- Teaching Assistant:

- Astrit Zhushi, MPEB 7th floor lab,
office hours TBA, ext. TBA

- Office hours begin next week
- Time reserved for answering your questions
- Outside office hours, please email to schedule appointment

Meeting Times and Locations

- Wednesdays 9 AM - 11 AM,
Bentham Denys Holland LT
- Fridays 9 AM - 11 AM, Roberts 309
- Lecture will usually run 90 minutes
- No lecture: 16th or 18th February (reading week)

Readings

- This year's focus:
 - Mobile and Cloud Computing
- ~25 research papers:
 - wireless networking
 - mobile computing
 - data center services
 - peer-to-peer systems
 - mobile application security
- Available on class web page; **print these yourselves**
- All readings examinable

Readings, Lectures, and Lecture Notes

- Readings must be read before lecture; lectures **assume you have done so**
- Lecture notes will be posted to the class web site just after lecture
- Class calendar shows all reading assignments day by day...

One-Pagers: Short Questions on Readings

- A question on one reading for each lecture will appear in calendar (posted \geq 48 hours before lecture)
- You must turn in a 200- to 500-word answer at the **start of lecture**
- Marked on 0-2 scale:
 - 0: not turned in at start of lecture, or doesn't meaningfully answer question
 - 1: answers the question asked
 - 2: precisely, correctly, and thoroughly answers the question asked
- All of equal weight; total contribution **15%**

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- You must turn in a 200- to 500-word answer at the **start of lecture**
- Marked on a scale of 0-2
No late days in GZ06!
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 - 1: answers the question asked
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Paper Presentations

- Students form groups; each group chooses one paper to present
- Student groups present in last two weeks of class; these papers also examinable for all
- Presentation must:
 - clearly explain ideas in paper
 - constructively critique ideas and results in paper
- List of papers to choose from posted **next week** on class web site
- Papers given on first-come, first-serve basis: **form groups, choose papers quickly!**
- Presentation contributes **10% of class total marks**

Grading

- Final grade components:
 - One-pagers: 15%
 - Paper presentation: 10%
 - Three mid-term exams: 25% each
- Mid-term exams:
 - Monday, 31st January
 - Monday, 28th February
 - Friday, 25th March
 - Focuses on papers in immediately prior third of class (but all prior material examinable)
 - Absence must be cleared by doctor's note (or similar documentation)

Class Communication

- Class web page
 - <http://www.cs.ucl.ac.uk/staff/K.Jamieson/gz06/s2011/>
 - Detailed calendar, coursework, class policies, announcements/corrections
 - **Your responsibility: check page daily!**
- News and Announcements Forum
 - Available on UCL Moodle web page for M038/GZ06
 - Recent news summarized on official (non-Moodle) M038/GZ06 front page
 - Archived on web; also emails all enrolled students
 - You should automatically be granted access to the Moodle page; if not, use Moodle enrollment key
 - **Your responsibility: check email daily!**

Class Communication (cont'd)

- Staff mailing list:
gz06-staff@<department's domain>
 - Reaches staff only
 - Use for questions
 - Staff will forward questions and answers of interest to whole class via web forum
 - Please use **this address** for class-related email, not staff individual email addresses; any of us can reply, so **faster response time**

Academic Honesty

- All one-pagers must be completed **individually**; paper presentations must be written by **your group alone**
- May **discuss readings**
- May not **discuss details of your one-pager answer with others**
- May not **show your answer to others** (this year or in future years)
- May not **look at others' answers** (this year or from past years)

Academic Honesty (cont'd)

- Don't copy text—you **will** be caught!
- Penalty for copying: automatic zero marks, referral for disciplinary action by UCL (usually leads to exclusion from all exams at UCL)

Our Other Important Agenda

- Introduce you to networking **research**
- Focus on hot topics, *e.g.*,
 - **Multi-hop wireless (“mesh”) networks**, *e.g.*, network entire city using almost entirely wireless infrastructure
 - **Mobile computing security**: smart phones hold great deal of sensitive personal data; can untrusted apps steal these data?
 - **Peer-to-peer systems**: building a distributed application on a changing set of hosts spread across the Internet
 - **Data-center computing**: designing scalable, network-accessible storage and computation

Projects

- Material in this class is a great basis for NCS masters projects
- Mobile devices will be made available to those interested in pursuing projects in mobile and cloud computing
 - Windows 7, Blackberry, Android smartphones
 - Microsoft Azure cloud services

Why are we here?

- Learn **fundamental problems** in networked systems
 - Design for scalability, robustness in large-scale, aggressively distributed systems
 - Gain perspective on competing designs
- Learn to think critically about quality of research papers; so you can do good research yourself; acquire **taste**
- Ground rules:
 - Feel free to criticize or defend a paper, or my take on it!
 - Any comment can lead to (bounded) discussion!

Evaluating a Paper

- Important, relevant problem? Clever?
Orthogonal!
- Reasonable assumptions and models?
- Longer ago published, more you can judge based on impact:
 - Does everyone now use systems derived from it?
- Recent papers: **more on cleverness, promise**
- Other contributions possible: thorough investigation of **complex phenomena**; comparison that **brings sense to an area**

How to Read a Research Paper Critically

- Take notes as you read
 - Question assumptions, importance of problem, important effects not mentioned by authors
 - Write questions to track what you don't understand
- Don't let ideas or design details pass until you understand them
 - May need to re-read a paragraph or section many times, or even discuss with peers
 - **You can't fully decide if design is good unless you understand all details! Be vigilant.**
- Don't presume authors' assumptions or design choices correct simply because paper published!

Summary: M038/GZ06

- One research paper (occasionally more) to read per lecture
 - Expected to read papers **before arriving at lecture**
 - Lectures largely consist of discussion of assigned reading; **difficult to follow if haven't read paper**
 - Many topics, fast pace
 - All papers examinable
- Emphasis on **critical reading** of papers
 - Gain perspective on competing designs
- Emphasis on **fundamental problems** in networked systems
 - Design for scalability, robustness in large-scale, aggressively distributed systems

Summary: M038/GZ06

- One research paper (occasionally more) to read per lecture

Think **critically** about research by **others** to learn how to do research **yourself**.

Acquire taste!

- Emphasis on **critical reading** of papers
 - Gain perspective on competing designs
- Emphasis on **fundamental problems** in networked systems
 - Design for scalability, robustness in large-scale, aggressively distributed systems