CISC883: LECTURE 3 INTRODUCTION TO ULSS

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Position Paper Assignment

- Due: Week 6, 19 October, 2:30 pm
 - In 2 weeks!
- 2-4 page position paper discussing how one ULSS of choice matches Lampson's design principles
- Example paper on website: Google
 - http://sailhome.cs.queensu.ca/~corpaul/cisc883_2016/index.html
- 2-column IEEE style (Latex) http:// www.ieee.org/conferences_events/conferences/publishing/templates.html

Position Paper Assignment

- Don't discuss Google in your position paper!
- The more principles you discuss from Lampson's paper & discuss how your ULSS meets those principles (or doesn't), the higher your paper will be graded
- Paper will be graded as an individual assignment & papers must be unique!

Presentation Topics/ Themes

- 1. Large-Scale Applications
- 2. Web APIs and Web Services
- 3. Hosted Applications
- 4. Infrastructure for Rent
- 5. Autonomic computing and monitoring platforms & approaches
- 6. Mobile App Platforms
- 7. Tools for Large-Scale Analysis

Topic Assignment

- For your first topic:
 - Everyone (who submitted :() got their first and second choice!

Topic Assignment

Торіс	Presenter 1	Presenter 2
Large-Scale Applications	Chad	Patrick
Web APIs & Web Services	Thanh	Harshith
Hosted Applications	Thanh	Sudharshan
Infrastructure for Rent	Harshith	Kanchan
Autonomic computing & monitoring platforms & approaches	Gopi	Kanchan
Mobile App Platforms	Patrick	Sudharshan
Tools for Large-Scale Analysis	Chad	Gopi

Week 6's Topic (19 Oct)

- Large Scale Applications
 - Presenters: Chad & Patrick
- Remember: Discuss the technology from a ULSS perspective
- 45 mins presentation + 15 mins questions
 Also: 5 minutes feedback on presentation by your colleagues

Week 6's Topic (19 Oct)

Email me before next week's lecture which paper you recommend (12 October)

No recommended paper = no grade!

First Come, First Served !

Project Proposal

- 5-page IEEE format project proposal
 Week 8, 2 November, 2:30 pm
- 15-minute presentation (hard limit)
 Week 8, 2 November
- Review of three project reports
 Week 9, 9 November, 2:30 pm

Project Proposal

- Outline a new ULSS project by identifying a problem area & a potential solution
- An opportunity for you to think about how to outline your thesis
 - Speak to your supervisor if it is difficult to identify a research area you are interested in exploring

Resources for this lecture

- How to Give Presentations:
 - S. L. P. Jones, J. Hughes, J. Launchbury. "How to give a good research talk"
 - http

://greatresearch.org/2013/10/04/presenting-a-technical-talk/

- http://www.ifs.tuwien.ac.at/~silvia/research-tips/speaker.pdf
- http://www.ifs.tuwien.ac.at/~ silvia/research-tips/Giving%20a%20talk.pdf
- Project Proposal:
 - http://www.e-wilkes.com/john/papers/HPL-CSP-90-42.pdf

Reviewing Papers ... Continued



Referee Report

- Brief summary of paper (1-5 sentences)
- Evaluation of the goal & quality of the work
- Overall recommendation as to publication
 - Strength of recommendation
 - Reject, Weak Reject, Weak Accept, Accept
- Confidence of Reviewer
 - How qualified are you to evaluate this work?

Evaluating Research

- What is the purpose of the paper?
- Is this paper appropriate?
- Is the goal of this paper significant?
- Is the method of approach valid?

Evaluating Research

- Is the execution of the research correct?
- Are the correct conclusions being drawn from the results?
- Is the presentation satisfactory?
- What did you learn?

How to Give a Good Presentation



Publishing Vs. Presenting

- Previously,
 - Importance of publishing
- Today,
 - Importance of presenting
- They go hand-in-hand



Publishing Vs. Presenting

Publishing Papers

- Publications live on long after the publication venue
 - Google Scholar, ACM/IEEE, Citeseer

Presenting Papers

- Direct & immediate communication with research community
 - But also: Slideshare
- Audience:
 - Specialized in your area
 - General computing audience

Publishing vs. Presenting

- Your paper is the product
- Your talk is the teaser for the product
 - Don't confuse the two!

The purpose of a presentation is...

- Build relationships ... collaborations
- Get feedback
- Communicate your ideas to others & make them eager to read your paper



The purpose of a presentation is NOT...

- To impress your audience with your brainpower
- To tell them all you know about your topic
 Note that this is different from teaching!
- To report on your results in detail; this should be in the paper
- To present all the technical details of the conducted research

Since your presentation is a teaser ...

Plan your presentation first!

2 questions to think of before preparing your presentation:

- 1. Who is my primary audience?
- 2. If someone remembers only one thing from my talk, what would it be? ... "Message to take away"

Don't forget to tell the audience !

Presentation Breakdown

- Use a top-down approach
 - Introduction: Problem definition, Motivation
 - Goal
 - Body: Solution, frameworks
 - Evaluation/ Results
 - test data, evaluation results, performance
 - Discussion & Conclusion
 - Strengths & weaknesses, take-away message, future work



Remember to Indicate that your talk is over

What to say ... Examples (1)

- Your underlying research:
 - Aims to solve related problems *** Too Abstract !**
 - Finding a suitable solution
 - Generalizing your solution
- Choose a simple motivating example & use it in your presentation
- Make it readable !



What to say ... Examples (2)

- Paper Examples
 - Can be more complex
 - Explain all the details
 - Can have more than 1 example
- Presentation Examples
 - Simple: can be explained within time limits
 - Readable
 - Omit unnecessary details from the simple example !
 - Time limit will probably allow for 1 example

"Choose an example simple enough to justify the important aspects of your solution"

What to say ... Pruning (1)

Say enough to convey the essential content of your idea, but do not overwhelm your audience with too much material.

Discuss some aspects in more detail than others
DON'T discuss everything in an abstract way or run over time limits

What to say ... Pruning (2)

- Motivation is essential ... but don't take it too far!
- Jump to an example that motivates your work
- If you bore people at the beginning, you might never get their attention again!

What to say ... Telling it how it is

- Discuss "weaknesses", "threats to validity", etc.
 - Concealing problems is dishonest!

- You may get useful suggestions on how to address these points
 - Your audience can help improve your research!

Suggestions for Good Talks ... (1)



Suggestions for Good Talks ... (2)

- Don't jam your slides; maximum 5 points per slide (preferably less!)
- Don't write on your slides what you plan to say
 Use side notes to remind you what to say
- Remind; don't assume

Suggestions for Good Talks ... (3)

Project yourself

- Point at the screen, when necessary
- Speak to the back of the room
- Agenda ... useful or not ?
 - "This is what I have discussed so far, and now I'm going on to cover these areas"; OR
 - Add a title slide before each section in your talk

Suggestions for Good Talks ... (4)

- Make eye contact with your audience...
- Finish on time!
- Prepare slides that answer questions you expect to get
- **Do not** discuss related work!
- Use repetition

Suggestions for Good Talks ... (5)

$$\frac{\partial}{\partial x_i} \frac{\partial}{\partial x_k} A_i - \frac{\partial}{\partial x_i} \frac{\partial}{\partial x_i} A_k + \frac{1}{c} \frac{\partial}{\partial x_k} \frac{\partial \phi}{\partial t} + \frac{1}{c^2} \frac{\partial^2 A_k}{\partial t^2} = \frac{4\pi}{c} J_k$$
$$\frac{\partial}{\partial x_k} \vec{\nabla} \cdot \vec{A} - \nabla^2 A_k + \frac{1}{c} \frac{\partial}{\partial x_k} \frac{\partial \phi}{\partial t} + \frac{1}{c^2} \frac{\partial^2 A_k}{\partial t^2} = \frac{4\pi}{c} J_k$$
$$-\nabla^2 A_k + \frac{1}{c^2} \frac{\partial^2 A_k}{\partial t^2} + \frac{\partial}{\partial x_k} \left(\vec{\nabla} \cdot \vec{A} + \frac{1}{c} \frac{\partial \phi}{\partial t} \right) = \frac{4\pi}{c} J_k$$
$$-\nabla^2 \vec{A} + \frac{1}{c^2} \frac{\partial^2 \vec{A}}{\partial t^2} + \vec{\nabla} \left(\vec{\nabla} \cdot \vec{A} + \frac{1}{c} \frac{\partial \phi}{\partial t} \right) = \frac{4\pi}{c} J_k$$

Suggestions for Good Talks ... (6)

- Omit unnecessary math or detail
- An audience will not parse detailed notation
- At worst, they will try & fail instead of listening to you
- Refer to the paper for details

Suggestions for Good Talks ... (7)

• NO APOLOGIES !

- "I didn't have time to prepare this talk"
- "I don't have time to tell you about this"
- "My computer broke down, so I don't have the results I expected"
- "I don't feel qualified to address this audience"

Your audience ...

- Ideally, they will be alert & enthusiastic to discuss your work
- In reality, they have seen many talks & are unfamiliar with your work



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Your Audience ...

- Wake them up!
- Give them a reason to watch ... ideas ?



Your Audience ...

- Motivate them or lose them !
 - What is the problem?
 - Why is it interesting?
 - Why should I bother to pay attention?

Your Audience ...

- Questions are a good sign, not a bad one
 Questions imply that the audience is paying attention & cares to get clarification
- Specifically encourage questions

Giving a presentation

- Think positive
- Don't read your slides
- Be slow & steady
- Don't agonize over mistakes
- Be enthusiastic!

Lecture Vs. Talk

- Course presentations are different from conference presentations
- Course presentations are used as a study material
- Conference presentations encourage attendees to read the paper

Questions slide – don't!



- 1. What is the main characteristic of ULSSs?
- 2. What are wicked problems?
- 3. ULSSs are socio-technical ecosystems ... ?
- 4. "Decentralization" is a ULSS characteristic ... elaborate
- 5. "Normal Failures" is a ULSS characteristic ... elaborate
- 6. "Erosion of the people-system boundary" ... elaborate
- 7. What is a System of Systems (SOS)?
- 8. What's the difference between research & survey papers?
- 9. What is peer reviewing?
- 10. What is a publishable paper?
- 11. Discuss a characteristic of SOS...
- 12. Mention 2 things to avoid in a presentation.
- 13. Mention 2 things that can improve a presentation
- 14. What's the difference between paper & presentation examples?

How to Write a Project Proposal



Project Proposal

- Hewlett-Packard CSP startup document
 Discusses project proposal write-ups
- The most successful projects in this group begun by recording their aspirations & intentions
- Results in a clear set of goals that guide the project & help determine when action is needed to get back on track

Project Proposal

- Think of the project as a hypothesis-experimentconclusion chain
 - The conclusion is a justified solution to an interesting problem
- Writing a project proposal can be broken down into 5 major sections

Project Proposal: Paper Structure

- 1. Problem Statement
- 2. Proposal
- 3. Hypotheses
- 4. Experiments
- 5. Results

Project Proposal: Problem Statement

- What is the problem that this project is going to address?
- *Does it matter*? why is the problem important?
- Who will benefit when the problem is solved?

Project Proposal: Proposal

 What is the basic approach, method, idea or tool that's being suggested to solve the problem?

Project Proposal: Hypotheses

- What are the expected effects of the proposed solution? Why is this?
- What are plausible alternatives? How likely are they?
- What's good & bad about the alternatives by comparison with what's proposed?
- What have others done, & what did they learn?
 Literature Search

Project Proposal: Experiments

- What will be done to test out the hypotheses? How will this confirm or deny the hypotheses? Why will the conclusions be believable?
- Who will work on this, & for how long?
- What additional equipment or resources will be needed?

Project Proposal: Results

- What will be the outcome of the work, & when?
- What are the intermediate milestones? How will we know when they are complete?
- What are the measures for success? How will be know to declare the project a success?

Project Proposal:

Variations in Paper Structure

- Title & Author Name
- Abstract
- Introduction
- Related Work
- Research Questions
- Methodology
 - Data
 - Addressing Research questions
- Milestones & Timeline
- Expected Risks & Challenges
- Conclusion
- References