Lecture03a: Research

CS540 1/30/18

Announcements

On-campus students:
Make sure I am wearing the microphone
We are going to start using the 2nd microphone for questions

All students:
Project 1 will be assigned today; due Thursday, Feb 15.


Why do we write papers?

To teach the reader
- To define a new problem
- Argue that it is novel
- Argue that it is important
- To present a new technique or algorithm
- Argue that it is novel
- Present data showing it is better than SOA
- To present a new analysis
- Argue that the analysis is novel
- Teaches us something new about the problem or previous techniques
- To present new tools or data sets
- Argue that the tool/data set is novel
- Explain how it will help the reader and/or field
- To survey the field
  - Quickly bring readers “up to date”

Why do we present papers?

It’s a commercial!
Convince the audience to read your paper!
- Motivation: why your work is important
- Conclusion: what is the take away message?
- What should they learn
- Methodology: just a hint
- So they know what to expect in the paper

For some audience members, audio/visual presentations are more memorable than papers
- So emphasize the conclusion

How do we write papers?

No surprises. We use the following outline:
1. Abstract: one paragraph
2. Introduction
   1. What problem are we addressing
   2. Why is it important
   3. What is your contribution
   4. What will you conclude
3. Background
   1. Review previous work
4. Methodology
   1. Describe your approach in detail
   2. Identify the contribution
   3. Describe experimental design
5. Results
   1. Present experiment data
   2. Describe results – tell user what to conclude
6. Conclusion: re-emphasize contribution, identify future work

What should your paper say?

Think about the introduction:
1. What problem are you solving?
   - Which algorithms are you comparing?
   - Are you modifying them?
   - What conditions are you comparing them under?
2. Why this combination of algorithms and conditions?
   - What makes it interesting?
   - What is your contribution?
3. What is your contribution?
   - What question or hypothesis do you address?
   - How will you measure success?

You will add (4) What is your conclusion later
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<tr>
<th>What else?</th>
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<tr>
<td><strong>Literature review</strong></td>
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<tr>
<td>- Where do your algorithms fit within scheduling/search?</td>
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<tr>
<td>- Compare</td>
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<tr>
<td>- How do your algorithms/tasks differ</td>
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<tr>
<td>- Contrast</td>
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<tr>
<td>- The compare/contrast should relate to what was interesting...</td>
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<tr>
<td><strong>Methodology</strong></td>
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<tr>
<td>- Don’t tell me about the code, unless there is a reason to</td>
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<tr>
<td>- Describe your contribution</td>
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<td>- Describe initial conditions, performance measures</td>
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<td>- Describe experimental method</td>
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<tr>
<th>Still More...</th>
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<tr>
<td><strong>Results</strong></td>
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<tr>
<td>- This is why you have to write the code</td>
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<td>- Describe the results of your experiments</td>
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<td>- Tables are highly recommended</td>
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<td>- Figures are highly recommended</td>
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<tr>
<td>- Tell the user what they should conclude</td>
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<tr>
<td>- And why</td>
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<table>
<thead>
<tr>
<th><strong>Conclusion</strong></th>
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<tr>
<td>- Don’t recapitulate Sections 3 &amp; 4</td>
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<td>- Highlight the most important contributions/results</td>
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<td>- Suggest future work</td>
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