Tips for Reading a Technical Paper - Overview

Tutorial: http://sjsu.libsurveys.com/readingtechnicalpaper
Identify structure of a technical article

**Scientific Method**
- Ask a Question
- Do Background Research
- Construct a Hypothesis
- Test with an Experiment
- Procedure Working?
  - No
  - Yes
- Analyze Data and Draw Conclusions
  - Results Align with Hypothesis
  - Results Align Partially or Not at All with Hypothesis
- Communicate Results

**Engineering Method**
- Define the Problem
- Do Background Research
- Specify Requirements
- Brainstorm, Evaluate, and Choose Solution
- Develop and Prototype Solution
- Test Solution
  - Solution Meets Requirements
  - Solution Meets Requirements Partially or Not at All
- Communicate Results

Troubleshoot procedure. Carefully check all steps and set-up.
Parts of a Technical Paper -1

• Introduction
  1. Motivations
  2. Discussion of related work
  3. Problem – people vs. technical
  4. Outline of proposed solution
Parts of a Technical Paper - 2

• Body
  1. Solutions to the problem
  2. Architecture/Design
  3. Weaknesses/Strengths
  4. Directions for future work
• Conclusions
  1. Discussions of contributions
  2. Limitations
Three Pass Approach

1\textsuperscript{st} pass: Scan
2\textsuperscript{nd} pass: Jot down main points / indicators
3\textsuperscript{rd} pass: Read carefully – issues, ideas for future work
## Indicators of Main Points

<table>
<thead>
<tr>
<th>Main Points</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivation of the research</td>
<td>intent, aim, purpose, the paper examines</td>
</tr>
<tr>
<td>People and technical problems</td>
<td>issue, challenge, problem, even though, there is a need of, lack of</td>
</tr>
<tr>
<td>Solutions to the problem(s)</td>
<td>solution, improve, we hypothesize</td>
</tr>
<tr>
<td>Architecture and design</td>
<td>we propose, introduce, redesign, develop</td>
</tr>
<tr>
<td>Weaknesses and strengths of design</td>
<td>weakness, strength, disadvantage, advantage, improvement</td>
</tr>
<tr>
<td>Limitations of the design or research</td>
<td>limitations, challenges</td>
</tr>
</tbody>
</table>
Indicators or Main Points: Purposeful Reading

- Strength of Design
- Weakness of design
- Problems
- Related Research
- Existing solution
- Limitations of implementing the design
Margin Notes – Use indicators from table