

CEN 5016: Software Engineering

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University of
Central Florida

Dr. Kevin Moran

Week 8- Class 1:
How to Read and
Present a Research Paper





- Adapted from William G. Griswold's advice on "How to Read an Engineering Research Paper"
- <http://www-cse.ucsd.edu/~wgg/CSE210/howtoread.html>

Before Reading a Research Paper



- Reading research papers effectively is challenging
- Why?
- Condensed style, focused audience, paper organization
- To effectively read papers you should know:
 - What you should get out of the paper?
 - Where that information is located?

How a Research Paper is Organized



- Technical papers are repetitive in nature!
- Introduction = motivation + solution outline
- Related Work
- Body of the Paper
 - Details on the solution
 - Detailed evaluation
- Discussion of the results
- Conclusions (recap of contributions and results)
- Because of these repetitions, you can read the paper ‘out of order’



- What are the motivations for this work?
 - A published paper solves the problem and no one else has published in the literature
 - Why there is no trivial solution to this problem?
 - What are the previous solutions and why are they inadequate?
- Specific research questions?
 - Motivation and statement should lead to this
 - This does not always happen – your job is a bit more difficult in that case



- *What is the proposed solution?*
 - Hypothesis (until it has been evaluated) or idea
 - Why is this solution better than previous solutions?
 - How the solution is achieved (design, implementation)?
 - Is it achievable at all? To what extent?



- *What is the work's evaluation of the proposed solution?*
 - Just having an idea is not sufficient anymore (although it used to be many years ago ...)
 - This is a concrete engagement of the research question (e.g., numbers)
 - Under which circumstances does it work (e.g., numbers) ?
 - What benefits and problems are identified?



- What is your analysis of the identified problem, idea and evaluation? (remember paper reports and subjective evaluation ...)
- Is this a good idea?
- What flaws do you perceive in this work?
- What are the most interesting points?
- What are the most controversial ideas or points?
- Is it really going to work?
- When might it become a reality?



- What are the contributions:
 - A new understanding of a research problem?
 - A new methodology for solving a problem?
 - A new algorithm?
 - A new breed of software tools or systems?
 - A new experimental method?
 - A new formalism or notation?
 - A new evidence to substantiate or disprove a previously published claim?
 - A new research area?



- *What are the future directions for this research*
- What do authors identify as a future work?
- What ideas did you come up with while reading the paper?
- You may get answers to these questions from the analysis of shortcomings or other critiques in the current work



- *What is your take-away message from this paper?*
- Sum up the main implication of the paper from your perspective (e.g., from your class project's perspective)!
- This is also useful for quick review and writing your final project paper!
- It also focuses you to identify the essence of the work



- As you read/skim the paper, actively attempt to answer questions 1-7
- Get motivation from the intro
- Intro & conclusion – the solution and evaluation at a high level
- Body of the paper – all the meat
- Pay attention to the context – other papers that are presented in the class WILL be relevant (past or future work for some papers ...)

What is Human Flourishing?



- Use this template: <http://www.cse.ucsd.edu/~wgg/CSE210/paperform.pdf>

Taking Notes on the Paper



- *Take Notes on the Paper!*
- Highlight important comments.
- Mark paragraphs: motivation, problem, idea/solution, evaluation, contributions
- Front of the paper: take away message
- Front of the paper: your key questions!
- Other questions are on the margins.
- Try to answer questions yourself. Use Wikipedia and Google (carefully!)