Agenda

Research Paper Structure
CS Experiments
HW4
Anatomy of a Research Paper

Abstract
Introduction
Related Work
Design and Implementation
Evaluation
Conclusion
Related work variations

Merged with Introduction
Inter-mingled with relevant sections
Placement of Related Work
wrt Review Article

Related work is not literature review or review paper

Why?
Related Work Regrets

Ideally

• Situate the work in the context of a larger community of scholarship. What’s new about this work? What inspired it?
• Provide credit and attribution for methods and ideas that are important to the work, but are not original to the paper.
• Provide concrete support for empirical claims made by the paper.

Reality

• Provide proof that the authors know what they are talking about, because they’ve clearly read a lot of papers.
• Provide proof that the work “belongs” in your journal or conference, because they cite the bigwigs in your field.
• Provide proof that the authors weren’t the first people to make an otherwise unsubstantiated claim.
• Provide lists of people who do related things, so they can be used as reviewers.
• Avoid pissing off the reviewers who do related things, since they might be upset if they weren’t cited.

https://mcorrell.medium.com/a-semi-ordered-list-of-things-that-annoy-me-in-research-papers-16d46ee87104
Signs of poor related work

Laundry list of summaries
No explicit relation to the proposed work
Lack of organization
Not putting one’s work in the context of the field
Other symptoms
  Old papers
  Papers from limited number of sources
The Body of the paper

Depending on the area of work may describe the proposed algorithm, proofs, systems, implementations
Evaluation

Description of experiments and metrics
Results of experiments
Implications of those results

More applicable to the applied areas of computer science.
Conclusions

Not the same as abstract
Short summary of what you did in the project and the implications of the results
Can include lessons learnt and future directions
Experiments

What experiments are useful?
Critical for the main arguments of the paper

What experiments are not useful?
Pointless experiments that generate pointless numbers, graphs, and tables
Types of Experiments

From the “context” perspective

Controlled
Uncontrolled

There are other perspectives to be covered in future lectures
Paper Introduction

What is the problem?

Why is it interesting and important?

Why is it hard? (E.g., why do naive approaches fail?)

Why hasn't it been solved before? (Or, what's wrong with previous proposed solutions? How does mine differ?)

What are the key components of my approach and results? Also include any specific limitations.

Summary of results and contributions.
HW4

Introduction

Your writeup should answer all the questions we discussed in the stated sequence.