

How to Write Research Papers

For CSSP Lab Members Only

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What Reviewers Want?

- Enough Paper Survey
 - Especially important papers can't be missed
- Innovation
 - What are the major differences from the others?
 - What are your advantage of your work?
- Technical Sound
 - No errors in your approaches
- Fair Comparisons
- Good English Writing



The Structure of a Research Paper

- Abstract
- ***Introduction*** ← ☆
- Motivation/Problem Formulation
- Proposed Approaches
- ***Experimental Results*** ← ☆
- Conclusions
- Acknowledgement
- ***Reference*** ← ☆



Abstract

- Point out the value/contribution of your work
- Summary of your work
- Summary of the issues you solved by your approaches
- Summary of the experimental results



Introduction

- Motivation of the research
- *Paper survey*
 - Point out the research trend
 - Summarize their work and **softly** point out their **“weakness”** for the research issue
- Approaches of your work
 - Indicate what the innovation of your approaches is



Introduction

- Advantages and/or contribution of your work
 - **For simulation only**, figure out the advantages compared with the others
 - **For real work with platform**, say TAIWAN ITS-1, emphasize your data is for real-time and/or on-line purpose.
 - **For real design with our algorithms**, enhance your test results which are better than others and the work has been realized or implemented. The others' work has to be implemented by you!
- Paper Organization



Problem Formulation

- Write down the main addressed issues of this motivation by mathematical equations, flowcharts, or algorithms, ...
- List the work by mathematical equations, flowcharts, or algorithms, ... done by others
- What's your new point? ← innovation?



Proposed Approaches

- **Be patient** to write your algorithms or equations and Write them **clear**.
 - Do **NOT** think the reviewers should recognize what you have done if you don't tell them the values of your work!
- It **MUST** be technically sounded. No technical errors can be allowed here.
- Use figures, tables, and/or flowcharts to point out your idea.



Experimental Results

- When you finally run out the simulation data or real results, you **MUST** figure them out **CLEARLY** for reviewers and readers.
 - You can't think reviewers will well know what you have done.
 - You have to tell reviewers clearly what your values are.
- Comparison is definitely necessary for evaluation of your work.
 - It **MUST** be fairly compared.
 - **Rewrite** the algorithms of the work you want to compare for well comparison.



Experimental Results

- Because of the language sick, we, nonnative English writers, often omit the important idea or can't point our values out clearly.
 - ❑ Write down everything you want to say first.
 - ❑ Cross out the overlapping.
 - ❑ Enhance the contribution or value. Rewrite it or write more clear.
 - ❑ **Ask for my help when you have difficulties.**



Conclusions

- Summarize what issues have been solved by your approach.
- Summarize your contribution and experimental results.
- Future work if possible



Acknowledgement

- No publication compensation can gain without this part.
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Reference

- Check the information for Authors for Writing Style
- Do not cite a too old reference unless it is a Bible paper!
- Order it by last name or by the appearance in the paper
- Cite your own published work



Reference

- Write it as the standard IEEE format
 - Journal Papers
 - Authors, “Title”, *Journal*, Vol. 1, No.5, *pp.xx~yy, year.*
 - Conference Papers
 - Authors, “Title”, *Proc. of Conference*, Place, Country, *pp.xx~yy, year.*
 - Books
 - Authors, *Title*, Book Chapter or page range, Book name, *Book dealer, year.*
 - Technical reports



Frequent Errors in Writing a Paper

- The Fig. 1 、 the Table 1 、 the Eq. 1 、 the A denotes a matrix....
 - Fig.1 、 Table 1 、 Eq. 1 、 A denotes a matrix...
- In the section 1 、 the Page 1
 - In Section 1 、 Page 1
- Forget to use Article or plural number
 - Method can be applied to...
 - Revise to **The** method can be applied to ...



Frequent Errors in Writing a Paper

- Passive voice can be used to enhance the statement
 - We found that the approach is less... ← ❌
 - It is observed that the approach is less... ← Better
- Avoid using the first person.
 - I used the approach to solve... ← ❌
 - We used the approach to solve... ← ❌
 - The approach can be used to solve... ← Better



Frequent Errors in Writing a Paper

- Use a synonym for the same meaning in the near sentences
 - The system uses...We use... ← ❌
 - The system uses...We apply... ← Better
 - Propose, present, provide; work, approach, method...
- Use “address”, “observe”, “yield/obtain” to replace “discuss”, “see/find”, “generate”, respectively.
- Using vowel pronunciation not vowel character to determine an or a
 - an FGPA, an $m \times n$ matrix.
 - a useful approach, an updated equation.



Frequent Errors in Writing a Paper

- Too many verbs in a sentence or too complicate statements within one sentence.
 - Simple sentences are encouraged.
 - Split your statements into two or more sentences.
- **Chinese English MUST be avoided.**
 - Use passive voice.
 - Note writing style instead of contents when you read a paper.



Before you submit your work to me for review, **You MUST**

- Check if there are red marks in your Word file. If yes, it is supposed you have typos in your work. Clean these out.
- Check if there are green marks in your Word file. If yes, it is supposed you have apparent grammar errors. Clear these out as possible as you can.
- Read your paper **AGAIN** to see whether **any common errors** mentioned in this hint exist.



CheckList

- Is Abstract enough to address your work?
- Has Introduction enough survey? Does Introduction contain your advantage or contribution?
- Do you address the problems to be solved clear?
- Does computer variables, not Math. Variables, show up in your paper?
- Do you point out your values or contribution clear?
- Do you make well comparisons?
- Is Reference enough or too old?

