Scientific Writing

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Why learn to write ?

- You will have to write your senior project report
- You may want to write scientific articles

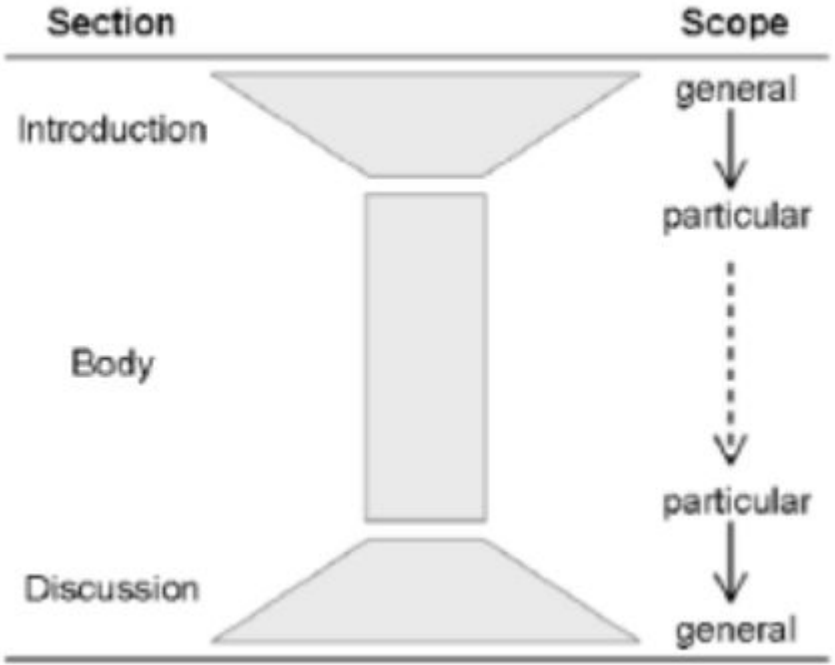
Successful writing

- Practice, practice, practice
- Study good examples
- But there are also techniques and rules to learn

Typical organisation of the article

1. Title
2. Abstract **(What)**
3. Introduction **(Why)**
4. Background / Related work / Problem settings **(Why)**
5. Proposed methods / Proposed algorithms **(How)**
6. Experiment / Results / Discussions **(How)**
7. Conclusion **(What, How)**
8. References
9. Appendix / Acknowledgement

Writing guideline



[9] J. Swales, *Genre Analysis: English in Academic and Research Settings*. Cambridge University Press, 1990, ISBN-10: 0521338131; ISBN-13: 978-0521338134.

Title

- You’ve already seen how to create good title from the previous lecture
- In general, a good title is
  - Be specific: What and How
  - Differential yourself from the others
  - Not too short or too long

Abstract

An abstract should tell:

- Motivation: Why do we care about the problem and the results?
- Problem statement: What problem is the paper trying to solve and what is the scope of the work?
- Approach: What was done to solve the problem?
- Results: What is the answer to the problem?
- Conclusions: What implications does the answer imply?

Introduction

- Some say, this is the most difficult part to write.
- Introduction is the selling part of your paper.
- It should
  - bring out the importance of the subject
  - present an overview on current research on the subject
  - reveal a research gap
  - formulate a research question
  - sketch the intent of the own work
  - outline important characteristics of your own work
  - give a brief outlook on the structure of the paper

Background & Problem setting

- Introduce the reader to the topic
- Introduce the notations
- Talk about related work in more details
- A place to set yourself apart from previous work
- Example
    - If your research is about classification it is time to talk about the data X and label Y and classification function f(x)
    - Note that in the introduction we were not talking about x,y, f(x)

Proposed method

- Present your method / technique / algorithms
- Could be divided into subsections if your method is complicated / contains a lot of parts

Experiment, results and discussions

- Present experimental protocol
  - How you did it ?
  - Why you did it ?
  - What data did you used ?
  - What are the experimental settings ?
  - Good protocol must allow others to repeat your experiment.
- Present the results
  - Table, graphs, figures
- Discussions
  - Should follow the results

Conclusion

- Talk about what just happened in the previous pages
- A good conclusion links experimental results back to your research questions.
- Conclusion could also include **future work**
- Sometimes, the conclusion is more or less the longer version of abstract.

References

- Lists all the work you have referred to.
- Mind the format
  - To forget about the format, bibtex is probably the easiest.

You may have

- Acknowledgement
  - This is a good place to thanks your colleagues, acknowledge funding agency, thanks your supervisor.

- Appendix
  - We usually put extra results here
  - Or it could be the place to proof the theorem.

When to start writing ?

Now !

How ?

Tips

- Start with the title
- Organise your paper into multiple sections
- Put in dummy tables and figure
- When the paper takes shape, we'll be happy and we'll write more.
- Free writing
    - Write whatever in your mind

Remember

Writing is an iterative process