Scientific Writing[1]

SCC5933 – Metodologia de Pesquisa em Computação

Prof. Moacir Ponti
www.icmc.usp.br/~moacir

Instituto de Ciências Matemáticas e de Computação – USP

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1 — include material from Dr. Kristin Sainani / Prof. Thiago Pardo

Agenda

Introduction

Format and sections

Writing: style and clarity

Summary

What makes writing good?

1. It communicates a good idea in a clear and effective way

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   - It requires content – something relevant to write about

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1. It communicates a good idea in a clear and effective way

2. Good writing has elegant style
   - This is something to develop. It requires time and a good editor to help.

What makes a good writer?

1. Innate talent?
2. Taking humanities and language courses?
3. An artistic nature?
4. Writing under the influence?
5. Divine inspiration?

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What makes a good writer?

1. Writer must have relevant content to write about
2. A clear line of thought
3. Following simple rules

What makes a good writer?

1. Writer must have relevant content to write about
2. A clear line of thought
3. Following simple rules
4. It is possible to learn to be a good writer.

Scientific text

1. Introduction
2. Development: material and method, results, discussion.
3. Conclusion

Scientific text

1. Title and Abstract
2. Introduction
3. *Technical background (optional)*
4. Material and method
5. Results
6. Discussion
7. Conclusion

Scientific text

1. Title and Abstract

2. Introduction

3. *Technical background (optional): a technical or teoretical description of other work necessary to understand your text;*
4. Material and method: what materials are used during the research; what scientific method are employed, mathematical models, experimental settings, validation. Describe in detail so it allows reproducibility.
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6. Discussion

7. Conclusion

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5. Results: observed data, theorems, proofs, ...
6. Discussion: crictical interpretation of the results, possibly comparing with previous studies.
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1. Title and Abstract

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7. Conclusion: what is the conclusion relating results and the hypothesis, and how it contributes do the field.

Scientific text

1. Title and Abstract: with introduction, gap, method, results and conclusion.
2. Introduction: contextualize and motivate the problem, tell the story of your research and from where it originated with the references to previous studies. Write your hipothesis.
3. *Technical background (optional): a technical or teoretical description of other work necessary to understand your text;*
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Master and PhD "Confirmation"

1. Should describe a research question, show clarity in the objetives, and a good literature review showing the research gaps;
2. The main point to be evaluated is the research proposal – initial results are welcome, but not strictly necessary;
3. The examiners are going to judge the relevance of the proposal, and if it is adequate as a MSc or PhD project;
4. Text and presentation of the candidate are also evaluated.

Dissertation and Thesis documents

1. Dissertation: investigate some research subject, showing results not necessarily original contributions; however the work it must be described with scientific methodology;
2. Thesis: must include a new contribution, in which the candidate is the main author. The candidate will be examined with respect to this thesis with more rigor when compared with the Dissertation.

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Complex idea: simple description

1. The Hough transform is a well-known image processing algorithm, but its applications in some real time systems is not feasible due to its high computational cost, which leds to the selection of alternative, but less robust, methods to be employed for the task of circular patterns applied to those systems.

Complex idea: simple description

1. The Hough transform is a well-known image processing algorithm, but its applications in some real time systems is not feasible due to its high computational cost, which leds to the selection of alternative, but less robust, methods to be employed for the task of circular patterns applied to those systems.
2. The Hough transform is a well-known image processing algorithm, but its applications in some real time systems is not feasible due to its high computational cost. Alternatively, faster and less robust methods can be employed for the task of circular patterns.

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2. Its main idea is based on three ideas...

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   - The research project aims at the implementation of a graph-based automatic summarizer.
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2. Its main idea is based on three ideas...
   - The proposed method has three main features

Active vs Passive

1. “Tree structures can be utilized for the dynamic storage of terms” ✗

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Obfuscation

1. "In respect to relative costs, the features of memory mean that with regard to systems today disk has greater associated expense for the elapsed time requirements of tasks involving access to stored data." ✗

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   - “Memory can be accessed more quickly than disk.” ✓

Analogy

1. "Writing a program is like building a model with connector blocks" ✗

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   - What are 'connector blocks'?
   - How are they like programming?
   - Is this similarity obvious to a novice?

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2. "Object detection, scene parsing and visual language grounding have been the cornerstones of computer vision research for the last two decades [3][4][7][14][26][30][42]." ✗

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   - "Object detection [3][4], scene parsing [7][14][26] and visual language grounding [3][4][30][42] have been the cornerstones of computer vision research for the last two decades." ✓

Summary

1. Read good scientific texts, pay atention to style and imitate!
2. Abandon bad writing habits
3. Talk about your research before trying to write about it
4. Write to motivate the readers – and not to bore them.
5. Do not wait for inspiration
6. Accept that writing is difficult to everyone
7. Review, review, review: the first attempt is never good enough
8. Learn to cut. Do not be attached to your words and sentences
9. Whenever possible, take some risks by innovating