

How to write a paper

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How to write a good paper

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Why me?

- I'm not sure
 - Many other researchers who consistently get their papers published
 - Peter van Beek, Pascal van Hentenryck, ...
 - Often win best paper awards

Why me?

- My papers get rejected too!
 - “This should be sent to a journal”
 - “Very good work, but I’m not sure why Alan Bundy hasn’t written this?”
- Anonymous review: “Clearly the author fails to understand Walsh’s previous work on this topic”

1st Lesson

- Don't lose heart
 - Even if you do everything right, reviewing is imperfect
 - Good papers **will** be rejected
 - But try to learn from your knock-backs!

Why you?

- Academic career
 - Publish or perish
- Have an impact
 - Communicate your results
 - Many have not had the impact they deserve for being bad writers
- Writing is fun!

Outline

- How to get your paper rejected
 - There are many traps even experienced researchers make
 - Myself very much included
- Hints about how to write a paper
 - Writing is a craft not a science!

How to be rejected

- Submit over-length
 - **Blind man:** send in 7 pages even though the instructions clearly say 5
 - Once they see quality of work, they'll be pleased you sent in more material

How to be rejected

- Submit over-length
 - **Diplomatic immunity:** put extra 2 pages in appendix
 - Appendices clearly don't count
 - Similarly, bibliography doesn't count

How to be rejected

- Submit over-length
 - **LaTeX hacker:**
 - change from 11 to 9 point font
 - squeeze inter-line space
 - ...
 - No one will ever notice

How to be rejected

- Submit late
 - Deadlines are meant for everyone else
 - Review schedules have plenty of slack
 - Your paper is worth the wait!

How to be rejected

- You don't have room for space wasters like:
 - Motivation, Background, Related work
- Why do review forms always have these on them anyway?

How to be rejected

- Annoy reader/reviewer
 - Proof is trivial, when it isn't
 - Prove the trivial
 - Fail to cite their work
 - Only cite yourself

How to be rejected

- Annoy reader/reviewer
 - Don't bother to spell check
 - What do computers know about spelling anyway?
- Use all the old cliches
 - "There has been a lot of interest recently in global constraints."

How to be rejected

- Annoy reader/reviewer
 - Be pompous, boring, ...
 - This is science not literature guys, who said it should be fun?
- Be overly formal
 - Theorems and formulas add weight

How to be rejected

- Annoy reader/reviewer
 - Make them really work
 - After all, these are difficult concepts and it took you some time ...
- Ignore reviews
 - Just keep sending paper in, eventually it will be accepted

How to write a paper

- Hints about how to write
 - Preparation
 - Writing itself
 - Ethics

Preparation

- Read, read, **read!**
 - To learn how to write, read a lot
- I spend over 20% of my time reading
 - 1 day/week in library

Read, Read, Read

- Related literature
 - So you can cite it
 - So you don't re-invent wheels
 - So you know what others think are important research questions

Read, Read, Read

- Other conference/journal papers where you intend to publish
 - So you learn the “house” style
 - So you can place your work within the bigger picture
 - So you learn how to ask good questions

Read, Read, Read

- Any sort of literature
 - Magazines, novels, biographies, ...
- Writing is a skill, learn from others
 - I read approx one novel/week as a way of trying to learn how to write
 - And I have the luxury of writing in my own language!

Review, Review, Review

- Review as much as you can
 - So you see good/bad writing
 - So you see the newest results (but see ethics)
 - So you ask yourself good questions
 - What is the contribution here? What are the weaknesses? ...

Write, Write, Write

- The best preparation to writing is to write
 - Writing gets easier the more you do it
 - Writing is easier if you've drafted much of what you already need
 - Writing is the best way to organize your thoughts
 - Writing is a good way to record what you have done

Writing

- Work out the timetable
 - Rushed papers frequently rejected
 - Late papers are *almost* always rejected
 - If you always write to deadlines, writing will seem more painful than it is

Writing

- Work out the message
 - You should be able to convey this in one sentence
 - “We propose a new global constraint, provide a filtering algorithm and show it useful on some standard benchmarks”

Writing

- Work out the message
 - You should be able to convey this in one sentence
 - “We identify an important class of symmetry, and show how to break it”
- Write to the message!

Writing

- Distribute the work
 - Play to your strengths
 - If you have a native speaker, have them write intro/conclusion ...
- Write to length
 - Brutally cut papers are frequently rejected

Writing

- Structure paper before you write it
- I write template for paper with sections and subsection headings first
 - Intro, Background, Theoretical results, Empirical results, Related work, Conclusions

Writing

- Start where you are most happy
- Often write from the middle outwards
 - Theoretical results, Experiments, ..., Conclusions, Introduction, Abstract

Writing

- Rule of Three
- Say everything 3 times!
 - Introduce idea (introduction)
 - Develop idea (body of paper)
 - Summarize result (conclusions)
- But don't copy verbatim the same text!

Title

- Make it meaningful and brief
 - Don't make a joke
 - Remember someone reading reference needs to be able to work out likely contents
 - Good: the TSP phase transition
 - Bad: Easy Problems are sometimes Hard

Abstract

- Executive summary
 - Try for one sentence or so on:
 - Motivation
 - Method
 - Key result
 - Conclusions

Introduction

- What is the problem?
- Why is it interesting?
- What are your contributions?
- What is the outline of what you will show?

Introduction

- Lure the reader in a with a good *first* sentence
 - Bad: There has been a lot of work recently on phase transition behaviour...
 - Good: Global constraints are central to the success of constraint programming...

Background

- Often need to set scene
 - Define formalism
 - Get reader up to speed
 - Identify research problem

Body of Paper

- Derive theoretical results
- Propose new algorithm
- Describe system engineered
- ...

Results

- Bullet proof paper
 - Theoretical results
 - Experiments only provide a limited view
 - Experimental results
 - Theory doesn't show if results are useful in practice

Related work

- Has many purposes
 - You give proper credit to prior work
 - You are not re-inventing wheel
 - You can compare what you do with what has been done before

Conclusions

- Remind reader of what you have done
- Place work in wider context
 - “What general lessons might be learnt from this study?”
- Flag all the exciting open research directions

Acknowledgements

- Thank all who have helped you
 - Provided code, data sets, ...
- Thank financial sponsors

Writing

- Keep it simple!
 - Active, not passive
 - Present, not past or future
 - Long words
 - Short sentences

Writing

- Avoid temptation to include every result you have
 - Paper needs to be coherent
 - Paper needs to be understandable
 - Many papers are rejected for having too many results!

Ethics of Writing

- Authorship
- Citation
- Submission
- Publication

Authorship

- Who should be an author?
 - Anyone who has made a significant contribution
 - May not have written any text!
 - Always err on the side of caution

Authorship

- Who should be an author?
 - Ask!
 - You'll be surprised how often people refuse
 - You can be sure they'll not work with you again if they feel they should be

Authorship

- Should my advisor be an author?
 - In first few years of thesis, probably yes
 - ..
 - Once you graduate, you should (be able to) write papers on your own
 - Again, ask!

Citation

- Cite all relevant work
 - Reviews always ask about Related Work
 - You'll want them to cite you
 - It's central to the scientific method
 - We stand on the shoulders of others

Citation

- Do I cite myself for a blind review?
 - Yes! You must credit all previous work
 - Either cite [Author, 2004]
 - Or write “As Walsh has shown previously [Walsh 2004] ...”

Submission

- Can I submit to multiple conferences?
 - What's the deal with the disclaimer ("This paper is not under review ..")?
- Can I submit to a journal immediately?
 - No hard and fast rules
 - My rule, once reviews are back and paper is effectively in press ...

Publication

- Can I publish my conference paper as it is in a journal?
- Probably not, even though conference is not archival
- Most journals ask you to extend conference paper substantially
 - Proofs, more experiments, ...

Final words

- It takes time to learn how to write
 - Don't be put off if at first your have papers rejected
 - All of us have papers rejected
- Spend time learning how to write
 - It will be worth the investment