Doctorado en Ingeniería de Sistemas e Informática, UZ
Febrero 2018

Publish or Perish

Juan Domingo Tardós
University of Zaragoza
Spain

My Background

- Professor on Systems Engineering and Automatic Control
- Research on perception and environment understanding in robotics
- One book and +70 papers co-authored
- +200 papers reviewed for journals and conferences
- +80 papers handled as Associate Editor of the IEEE Transactions on Robotics, IROS, RSS, obtaining reviews and writing recommendations for their publication or rejection
- This presentation reflects my own experience and opinions

Acknowledgement

- Thanks to José Neira, Javier Mínguez, Diego Gutiérrez, Eduardo Mena and Javier Campos for their suggestions and comments on this presentation.

Publish or Perish
Part II: How?

1. The publishing process
2. How to write a paper?
3. How to reply to referees?
4. How to write a review?
5. Ethical Issues
   - Authorship, Plagiarism, Salami slicing, Conflicts of interest,...

1. The Publishing Process

- Peer review:
  - Papers submitted to serious journals and conferences are subject to the scrutiny of other experts in the field (**reviewers** or **referees**), before publishing them.
- Objectives: maintain standards, improve performance, and provide credibility.
  - Prevents the dissemination of irrelevant findings, unwarranted claims, unacceptable interpretations, and personal views
  - In practice, it is very difficult to detect a deliberate fraud
  - If a journal finds that it has published a fraud, it usually acknowledges this in the same journal (for example Science).
- Reviewing papers is a community service, one of the professional obligations of a researcher.
  - Reviewers are not paid
  - Their only payment is recognition by the research community

Peer Review

A. Einstein, N. Rosen, "Do Gravitational Waves Exist?" **(NO)** submitted to *Physical Review,* June 1936

- (Editor) "would be glad to have your reaction to the various comments and criticisms the referee has made."
- (Einstein) "Dear Sir, We (Mr. Rosen and I) had sent you our manuscript for publication and had not authorized you to show it to specialists before it is printed. I see no reason to address the - in any case - erroneous comments of your anonymous expert. On the basis of this incident I prefer to publish the paper elsewhere. Respectfully, Albert Einstein"

- But Einstein was WRONG

A. Einstein, N. Rosen, "On Gravitational Waves" **(YES!)** *J. Franklin Inst.* 223, 43 (1937)

- Einstein could have found the error months earlier, simply by reading the referee's report that he had dismissed so hastily

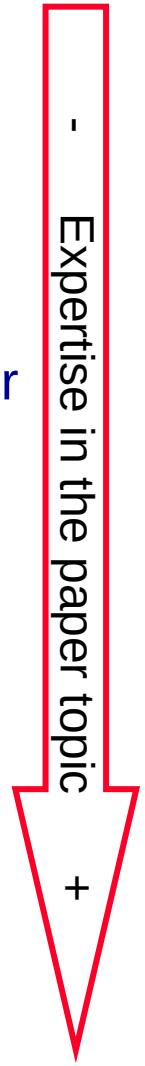
The Publishing Process

- Single-blinded peer review (the standard)
  - The reviewers are maintained anonymous to the authors
    - » Most researchers would refuse to review a paper if his/her name is disclosed to the authors.
- Double-blinded peer review (used in some publications)
  - The reviewers are maintained anonymous to the authors
  - The authors are maintained anonymous to the reviewers
    - » Objective: avoid that the author's (good or bad) reputation could bias the reviewers opinion on the quality of the work

Paper submitted to RSS 2007

The Editorial Team for Journals / Conferences

- Editor-in-chief / Program Chair
  - Organizes, receives papers and distributes them to the editors
- Editors / Program Board / Area Chairs
  - Distribute papers to the Associate Editors
  - Receive their recommendations and adopt the final decision for publishing or rejecting each paper.
- Associate Editors / Program Committee members
  - Find 2-4 relevant experts willing to review each paper
  - Read the paper and the reviews and write down a recommendation for accepting or rejecting the paper
- Reviewers
  - Write a detailed report evaluating the paper



The Decision Letter (1)

- Accept as is
  - On journals, almost never happens at the first round
- Conditionally Accept / Minor Revision (journals only)
  - Very high probability of being accepted if the authors perform the requested changes.
  - It will probably go thru an express review by the associate editor and maybe by one of the previous referees.
- Revise and Resubmit / Major Revision (journals only)
  - The paper is not publishable in its current form, but could be published if the authors address the issues raised by the referees
  - Read carefully the wording. Do they encourage resubmission?
  - The resubmission will go thru a new review cycle, most probably by the most critical referees and some fresh ones.

The Decision Letter (2)

- Reject
  - Don't dismay: 60% of the published papers were first rejected
  - Consider revising the paper and submitting to another place
  - Be careful: It may go to some of the same reviewers!
  - Complain to the editor? Unlikely to succeed. Try it only if you have strong evidence to support your complain.
- Reject without Review / Editorial Reject
  - The paper is not appropriate or clearly bellow the standard for that journal or conference, and was not sent out for reviews.

- Example of journal acceptance rates:
  - IEEE TRO 2008, global rate: 23%
  - for papers with multimedia: 39%
  - for revised and resubmitted: 52%

Rejection is NOT the end

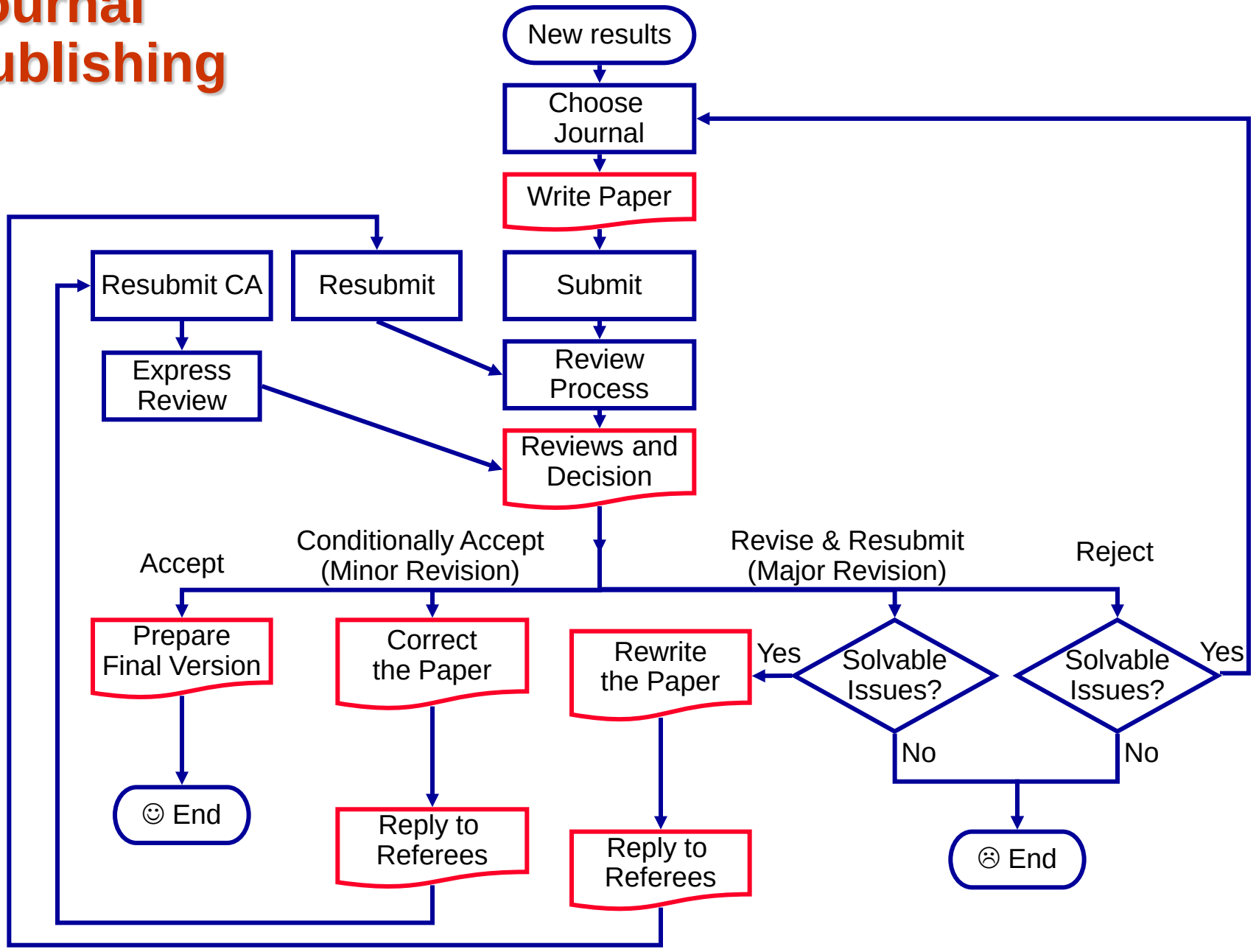
- Z. Ghahramani, X. Zhu and J. Lafferty, "Semi-Supervised Learning Using Gaussian Fields and Harmonic Functions", Int. Conf. Machine Learning, ICML 2003
  - This paper won the 2013 Classic Paper Prize
    - » The paper published at ICML 10 years ago which has had the most impact on the field
  - It was a revised version of a paper **rejected** from Neural Information Processing Systems Conference (NIPS)

http://www.cambridgenetwork.co.uk/news/machine-learning-paper-wins-classic-prize/

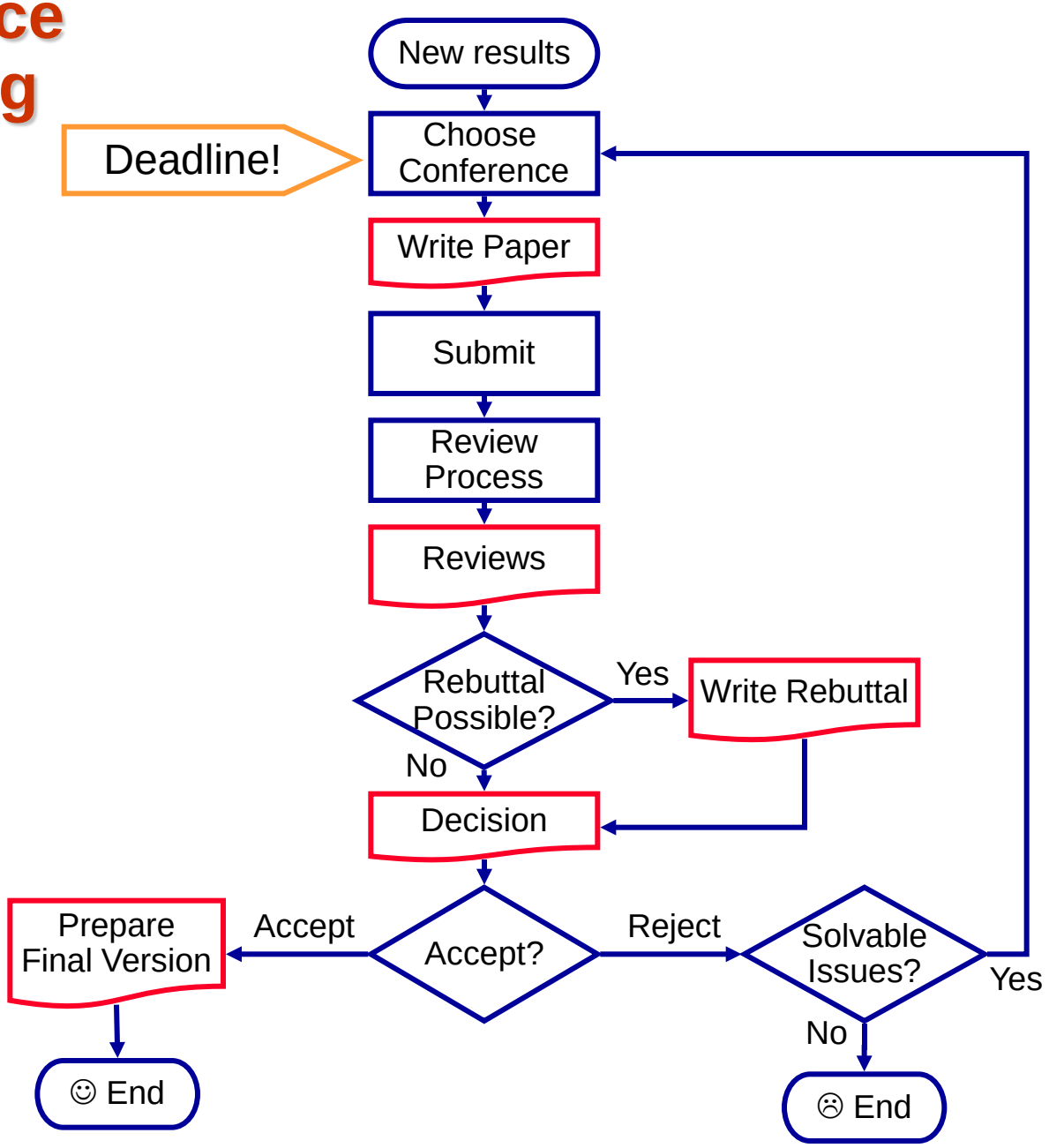
- What does not kill your paper makes it stronger

http://www.nature.com/news/rejection-improves-eventual-impact-of-manuscripts-1.11583

Journal Publishing



Conference Publishing



2. How to Write a Paper?

- To avoid the blank-page panic, start with the section titles and an itemize with the main points for each section
- Writing an abstract draft frames the work, and all authors can know what are they talking about
- Add theorems, figures or tables explaining your method and your results
- It may be easier to write first the paper body:
  - Title 6th
  - Abstract 5th
  - Introduction 4th
  - Contributions 1st
  - Results 2nd
  - Conclusions 3rd
- **NEVER** send out a paper without having read it carefully from top to bottom (you and your advisor!)

Style

- Keep it simple
  - Avoid long, complicated phrases
- Omit needless words
- Keep subject and verb close together
  - Anything in between risks to be considered annoying detail
- Use the active voice
  - ✘ An experiment to compare A and B has been performed (??)
  - ✓ We have performed an experiment to compare A and B
- Place the emphatic words of a sentence at **the end**
- Be clear and concise, and use concrete language
  - ✘ The system behavior leaves something to be desired when the noise increases to moderate levels.
  - ✓ With a 10% of spurious data, the system fails.

Title

- Summarize the paper in a few words
- Goal: convince to download and read the paper
  - ✘ Blind image deconvolution by multiscale variational search
  - ✓ Removing camera shake from a single photograph
- The paper is more likely to be cited if the title tells a story
  - ✓ Mapping Large Loops with a Single Hand-Held Camera
  - ✓ Building a Global Map of the Environment of a Mobile Robot: The Importance of Correlations
- If you are inventing a technique, name it in the title
  - ✓ Data association in Stochastic Mapping using the Joint Compatibility Test

Abstract

- Summarize the paper in a few sentences
- Goal: convince to download and read the paper
- Abstract and paper are redundant: the paper does not need the abstract to be understood
- **State the main contributions and results**

It this paper we present a new method/algorithm/system .... for the problem of .... It consists in .... We carry out a detailed evaluation/experiments and show that in comparison with current methods, our proposal is more/less .....

Introduction

- Goal: convince to read the rest of the paper
- Describe the problem.
  - Why is it interesting? Why is it not solved?
- Related work (it may work better after the paper body)
  - Discus **both** advantages and disadvantages of **all** references
  - Be generous to the competition, they are likely reviewers!
    - ✓ "in his inspiring paper, X shows…"; "we build on the work of X…"
- State explicitly your contributions
  - They must be substantiated with evidence in the paper
- Most common reasons for paper rejection:
  - The contributions are not clear
  - The claims are not substantiated in the paper
  - Failing to cite and compare with previous work

Body of the paper: Contributions and Results

- Goal: provide **evidence** to support **all** your claims
- First convey the intuition, then give the details
- Be kind to your readers
  - Don’t assume they know everything you do
  - If you build on previous work, give a high-level summary
  - If a section uses known techniques, say so
- Your descriptions should allow to reproduce your work
  - If possible, make your code available
- Compare with the relevant previous methods
  - When possible, use standard datasets and benchmarks

Discussion and Conclusions

- Conclusion ≠ Summary of the paper
  - Do not repeat the abstract or introduction
  - Do not summarize your technique
- Synthesize the results of your work
- Separate what is significant from what is not
- Put your results in perspective
- Be honest about the limitations of your technique
- Discuss conjectures, wish lists and open problems

3. How to reply to referees?

- When resubmitting a RR or CA paper, journals require a letter with the response to the reviewers
- Goal: convince the reviewers and the Associate Editor that the paper has been improved to warrant publication
- Listen to the referees, they have given their time for free to help you improve your paper

The three golden rules:

1. Answer completely
2. Answer politely
3. Answer with evidence

H.C.Williams, “How to reply to referees’ comments when submitting manuscripts for publication”, J. American Academy of Dermatology, 51(1): 79-83, July 2004.

Rule 1: Answer Completely

- Copy and paste the comments from the Associate Editor and the reviewers, and insert your answer to each comment.
- Numbering the comments may help:

  Associate Editor

  Comment 1

  …..

  Response

  …..

  Reviewer 1

  Comment 1

  …..

  Response

  …..

- Address the issues **in the paper**, and describe your changes in the response letter.

Rule 2: Answer Politely

- Be grateful for both praise and criticism
  - Praise improves your mood, criticism improves your paper
- If a reviewer misunderstands, it's **your fault**
  - ✘ The reviewer does not know the field
  - ✘ The reviewer has not understood, we meant X
  - ✓ We have modified section Y to make clear X
  - ✓ To clarify the issue we have added this paragraph to section Y: "<copy and paste the paragraph here>"
- For critical comments
  - ✓ We agree with the referee that …, but …
- For comments not that critical
  - ✓ We agree that this is an important area that requires further research

Rule 2: Answer Politely

- How to say no
  - ✓ With all due respect to the reviewer, we believe that this point is not correct. <And then, **provide evidence**>
  - ✓ The reviewer's comment about the limited size of the experiment is unfair, the experiment that we show is the largest to date [1] [5] [8].
  - ✓ We respectfully disagree with the reviewer in the need to compare with [7]: their method does known not to work with a single camera and ours does.

Rule 3: Answer with Evidence

- Editor's assumption: the reviewer is correct
- If you argue back with opinions instead of evidence, the paper is dead
- If you disagree with the reviewer
  - Explain why and provide a solid argument
  - Back it up with facts supported by references
- If the reviewer found your results not convincing
  - Provide more compelling experiments
  - Compare you results with previous techniques

Some special cases

- Conditionally accepted papers
  - Perform all the changes requested
  - Be concise in your answers
  - Resubmit quickly
  - You will probably get a speedy acceptance

- Conferences with a rebuttal phase
  - Usually you cannot provide a revised paper with your rebuttal
  - If space is limited, answer only the most critical comments
  - If the reviewer is wrong, provide evidence
  - Explain how you will change the paper to address the issues
  - If the changes are too important, the paper is dead

4. How to write a review?

A. J. Smith, “The task of the referee”, Computer 23(4):65-71, Apr 1990

- Direct your critics at the paper, not at the authors
- Be constructive
  - Judge the paper for the contributions it contains, not for what is missing
  - Suggest improvements
  - Specify **necessary** and **suggested** changes
- Be specific
  - Point out witch parts are difficult to understand
  - If something is wrong, explain why
  - If something is not new, provide references

The review report (1)

- What is the major paper contribution?
  - Is the goal significant?, is the problem real?
  - Is the main idea novel **and** interesting?
  - Does it advance over previous works?
  - If you think that the paper is good, explain why. Otherwise, a negative review may easily kill the paper.
- Is the paper technically correct?
  - Are the assumptions made explicit? Are they reasonable?
  - Are the mathematics correct?
  - Are the proofs correct?
  - If you have not checked all the math, warn the Associate Editor.

The review report (2)

- Are the results convincing?
  - Are the simulations and experiments realistic?
  - Were all significant cases tested?
  - Is the comparison with previous techniques fair?
- Are the correct conclusions drawn from the results?
  - Are all the paper claims substantiated with evidence?
- Is the presentation satisfactory?
  - A paper that is incomprehensible is not publishable
  - Does the abstract describe the paper?
  - Does the introduction explain the problem and framework?
  - Is the body clear and does it follow a logical order?
  - Is there too much or too little detail?

To which category does the paper belong?

1. Major result; very significant (1% of the papers)
2. Good, solid, interesting work (10%)
3. Minor, but positive, contribution to knowledge (30%?)
4. Elegant and technically correct, but useless
5. Neither elegant nor useful, but not actually wrong
6. Wrong and misleading
7. So badly written that technical evaluation is impossible

5. Ethical Issues

- Authorship
  - Authors have responsibility for their papers
  - "The IEEE affirms that authorship credit must be reserved for individuals who have met each of the following conditions:
    a. Made a significant intellectual contribution to the theoretical development, system or experimental design, prototype development, and/or the analysis and interpretation of data associated with the work contained in the manuscript;
    b. Contributed to drafting the article or reviewing and/or revising it for intellectual content; and
    c. Approved the final version of the manuscript as accepted for publication, including references."
    » IEEE Publication Services and Products Board Operations Manual, section 8.2.1
  - Being the director of the lab, the project leader, or having got the funds, **does not entitle someone to sign a paper.**

Ethical Issues

- Plagiarism
  - The use of someone else's prior ideas, processes, results, or words without explicitly acknowledging the original author and source
  - Potentially severe ethical and legal consequences
  - You can cite small portions of text, within quotes
  - For figures, you need written permission by the copyright holder
  - Always cite the source

Ethical Issues

- Self-Plagiarism
  - Copying from your own papers, without an adequate citation
  - Repeating in a journal results published in a conference is OK, provided there are no copyright issues, you cite the conference paper, and make explicit the improvements performed
    - ✓ "A preliminary version of this work was presented at ICRA'09 [1]. In this paper we include new experimental results and a more detailed analysis of the robustness of our algorithm."
  - Check the journal's policy. Some don't allow republishing, other require a specific degree of improvement. Example IEEE Trans. on Industrial Informatics:
    - » "Edited and substantially enhanced versions of conference papers with 40-50% of a new content may be considered for a review if the new material is of a novel nature and warrants publication. Such papers have to include the original conference paper(s) as a reference and may be required to have a different title."

Ethical Issues

- Salami slicing, or minimum publishable unit (MPU)
  - Splitting a contribution in the smallest portions that could still be published
  - You CV will grow fat, your reputation, slim.
- Conflicts of interest. You should not review a paper:
  - If an author is a close friend or an enemy, was your supervisor or your student, is in your same institution, has got common grants or has performed joint work with you in the last 4 years.
  - If you are doing directly competing work
    - » You are working on a paper with similar ideas
- Reviewing ethics
  - Don't use or discuss the contents of the papers you have reviewed, until published

Further reading

- A.J. Smith, The task of the referee, Computer 23(4):65-71, Apr 1990
- H. C. Williams, How to reply to referees' comments when submitting manuscripts for publication, J. American Academy of Dermatology, 51(1): 79-83, July 2004
- K.L. Woolley, J.P. Barron, Handling Manuscript Rejection: Insights from Evidence and Experience, Chest 135(2): 573-577, Feb 2009
- F. Durand, Notes on Writing, MIT CSAIL http://people.csail.mit.edu/fredo/student.html
- A Hertzmann, Writing Research Papers, http://www.dgp.toronto.edu/~hertzman/advice/writing-technical-papers.pdf

Assignment

- Read two of these references and write a summary

Take-Home Messages

- Before submitting a paper double-check that:
  - The abstract and introduction state your contributions
  - All claims are substantiated in the paper
  - You cite and discuss all relevant previous works
- The review process may have some randomness
  - The lower the publication rank, the higher the randomness
- Listen to the reviewers and don't get angry with them
- Do not discuss reviews with peers, they might be the actual reviewers!
- Answer completely, politely, and with evidence
- A revised paper has bigger chances to get accepted