Factors Leading to A Distinguished Paper

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Outline

- Overview
- Several Factors Deserving Consideration
- About Paper Writing
- About Oral Presentation
General Requirements for a Qualified PhD

- Solid and broad theoretical foundations
- Systematic and deep specialized knowledge
- Capability to perform independent research

One SCI Paper

How?
Several factors Leading to a Successful Person

- Perform body exercise everyday
  - Body is the infrastructure of your life
- Make plan for your life and career
  - Believe that your future can be planned!
- Trying to be a person deserving trust
  - Multiple roles, to your boss, to your partner, to your family, to your friends...
- Trying to learn effective communication skills

Bookworm? NO!
Outline

- Overview
- Several Factors Deserving Consideration
- About Paper Writing
- About Oral Presentation
Some Basic Principles Leading to a Qualified Researcher

- Research is for fun
  - Take it easy; do not consider it as a burden
- Paper reading is your life
  - Problem (research gap) identification; standard methods in your field; ideas for potential solutions
Some Basic Principles Leading to a Qualified Researcher

- Conduct the literature survey periodically
  - Make a conference & journal list; at least, you need to read the abstract to acquaint you with the recent development of the fields
  - Or, you can follow some “big guys” in your fields
Some Basic Principles Leading to a Qualified Researcher

- Journals related to my areas

IEEE Transactions on Pattern Analysis and Machine Intelligence
IEEE Transactions on Image Processing
IEEE Transactions on Broadcasting
IEEE Transactions on Multimedia
International Journal on Computer Vision
Pattern Recognition
Computer Vision and Image Understanding
Image and Vision Computing
Journal of Vision
Nature. Neuroscience
Vision Research
Trends in Cognitive Sciences
Some Basic Principles Leading to a Qualified Researcher

- Conferences related to my areas

  IEEE Int’ Conf. Computer Vision and Pattern Recognition (CVPR)
  IEEE International Conference on Computer Vision (ICCV)
  European Conference on Computer Vision (ECCV)
  Neural Information Processing Systems (NIPS)
Some Basic Principles Leading to a Qualified Researcher

- “Big guys” in my fields (http://sse.tongji.edu.cn/linzhang/UsefulLinks/links.htm)

Sparse Representation, Dictionary Learning and Low-Rank

   This is homepage for Julien Mairal, who works mainly on sparse representation and dictionary learning.

2. http://yima.csl.illinois.edu/
   This is the website of Dr. Yi Ma, at the Coordinated Science Laboratory, University of Illinois at Urbana–Champaign, USA.

Computational Biology

   This is the website of Prof. David Baker’s lab. They mainly focus on prediction and design of protein structures.

   This is the website of MIT Computational Biology Group, lead by Prof. Manolis Kellis.

3D Processing

   This is homepage of Michael Bronstein, a very young however promising researcher in Israel. He and his twin brother focus on non-rigid shape (2D and 3D) analysis, 3D face recognition, multi-dimensional scaling, topology, and data dimension reduction.

   This is the homepage for Dr. AJMAL S. MIAN’s, an Australian researcher. He focuses on 3D face recognition, video surveillance, facial expression recognition, video-based face recognition, 3D modeling, and multi-spectral computer vision. On his homepage, he also provides some useful Matlab packages for 3D processing.
Some Basic Principles Leading to a Qualified Researcher

- Cross-discipline usually is an easy way
  - Experts in fields A and B usually do not know stuffs in fields B and A; you can act as a bridge
  - So, do not always reading papers in one specific field

<table>
<thead>
<tr>
<th>Visual saliency</th>
<th>+</th>
<th>Image quality assessment</th>
<th>= TIP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase congruency</td>
<td>+</td>
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<td>= TIP</td>
</tr>
<tr>
<td>Phase congruency</td>
<td></td>
<td>biometrics</td>
<td>= PR</td>
</tr>
<tr>
<td>Sparse representation</td>
<td>+</td>
<td>3D face</td>
<td>= PLoS ONE</td>
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Some Basic Principles Leading to a Qualified Researcher

- Cross-discipline usually is an easy way
  - Experts in fields A and B usually do not know stuffs in fields B and A; you can act as a bridge
  - So, do not always reading papers in one specific field
- Having discussions with your friends, especially working in different fields; join conferences/seminars if possible
Some Basic Principles Leading to a Qualified Researcher

- Do not depend on (or even believe in) your supervisors
  - Knowledge or notions in their mind are usually old stiffs
  - Most active researchers are always master or PhD candidates
- For a selected theory/topic, you need to know everything
- Foundations are the most important

Math  Academic writing

A bit one day, keeping on the habit

Composing your own notes is a good habit!
Outline

- Overview
- Several Factors Deserving Consideration
- About Paper Writing
- About Oral Presentation
General procedures to a paper

Problem (research gap) identification → Investigating existing solutions → Propose your new solution

Submit to a journal ← Compose the paper ← Conduct experiments

If your solution performs better in some aspects

Good luck

Major revision ← Minor revision ← Accepted
Achievements deserving publication

- A novel system of significance to some extent
  - We did a lot in PolyU
- Novel algorithms/analysis methods to solve an existing problem
  - Several factors to quantify a solution: spatial complexity, time complexity, and accuracy
Problem (Research Gap) Identification

- Figure out a proper **scientific** or **engineering** problem from your supervisor’s current project
  - E.g., using iPhone5 to develop a simple game; it is not either a scientific or an engineering problem
- Problem to be solved in a single paper cannot be too big
  - Problems exist in the literature; in the current research world, it is quite difficult to propose novel problems
Some Relationships Deserving Meditation

- Tools VS tasks
  - E.g., how to measure the curvedness of a local surface?
Propose a new solution

- This is the **core** of the research
- One recent survey paper is a good start
- When do not know how to start, try to implement a classical method
- Cross-disciplinary approach is an easy way and usually can have good results
  - In our relevant field, ideas in vision research, brain modeling, and mathematics are usually of significant values
Journal/Conference Selection

- Select journal/conf before preparing your paper
  - Submissions to different journals or conferences may have different writing styles and formats
- Reputed journals or conferences are preferred
- Journal selection
  - SCI indexed?
  - Impact factor
  - Length of review cycle
Importance of Writing Skills

- Publishing papers is critical for researchers
- Publishing is hard
  - Low acceptance rate
  - Competing with good papers
  - Reviewers are potential competitors
What Reviewers Want

- AAAI Reviewers (partial) check list:
  - Does the paper introduce a new problem or provide a new solution to an existing one?
  - What is the main result of the paper?
  - Is the result significant?
  - Is the paper technically sound?
  - Does the paper provide an assessment of the strengths and limitations of the techniques/result?
  - Is the paper clearly written so as to accessible to most AI researchers?
  - Does the paper reference appropriate related work?
What Gets You Accepted?

- Attention to details
- Check and double check your work
- Consider the reviews
- English must be as good as possible
- Presentation is important
- Take your time with revision
- New, original and previously unpublished
- Critically evaluate your own manuscript
- Ethical rules must be obeyed
Paper Organization

Title

Abstract

Introduction

Related Work

Proposed Method

Experimental Results

Conclusion

Reference
Paper Organization

Title
Abstract
Introduction
Related Work
Proposed Method
Experimental Results
Conclusion
Reference

A good title should contain the fewest possible words that adequately describe the contents of a paper

DO
✓ Convey main findings of research
✓ Be specific
✓ Be concise
✓ Be complete
✓ Attract readers

DON’T
✓ Use unnecessary jargon
✓ Use uncommon abbreviations
✓ Use ambiguous terms
✓ Use unnecessary detail
✓ Focus on part of the content only
# Paper Organization

<table>
<thead>
<tr>
<th>Title</th>
<th>Only several sentences, covering the problem definition, the main idea of your proposed approach, and the achieved results. Use the abstract to “sell” your article</th>
</tr>
</thead>
</table>
| Abstract | Notes:  
✓ Is precise and honest  
✓ Can stand alone  
✓ Is brief and specific  
✓ Cites no references |
| Introduction |  
| Related Work |  
| Proposed Method |  
| Experimental Results |  
| Conclusion |  
| Reference |  

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### Paper Organization

<table>
<thead>
<tr>
<th>Title</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Example: “This paper presents an innovative set of tools developed to support a methodology to design and upgrade wastewater treatment systems (WTS). Previous work by Grey (2004), Lacey (2001) and others …This paper illustrates the merits of these tools to make the innovative methodology of interest to everyone involved in WTS and will become the new design standard worldwide.”</td>
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**Better to avoid:**
- Abbreviations, references (save for the introduction), and exaggerated conclusions
### Paper Organization

<table>
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<tr>
<th>Section</th>
<th>Keywords</th>
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<tbody>
<tr>
<td>Title</td>
<td>Good Keywords: Groundwater flooding, frequency analysis, fractured aquifer, rainfall event, hydraulic head</td>
</tr>
<tr>
<td>Abstract</td>
<td>Bad keywords: methodology, predetermination, aquifer, flood, analysis</td>
</tr>
<tr>
<td>Introduction</td>
<td>Notes for keywords:</td>
</tr>
<tr>
<td>Related Work</td>
<td>✓ Keywords should be specific</td>
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<td>Proposed Method</td>
<td>✓ Avoid uncommon abbreviations and general terms</td>
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The most important section. It usually includes background introduction, related methods in the literature, research gap description, your contribution and main ideas of your work, and the organization of the paper.

Note:
1. It would be better if you could do some deep analysis to the existing methods, pointing out their potential drawbacks
2. Your motivations need to be clearly described here
3. Here, you need to stress your contributions and your ideas in a few powerful sentences; should be convincible, and sometimes a little aggressive
# Paper Organization

<table>
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<tr>
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<tr>
<td>Abstract</td>
<td>✓ Write an extensive review of the field</td>
</tr>
<tr>
<td>Introduction</td>
<td>✓ Cite your own studies or those of colleagues disproportionately while ignoring contradictory studies or those of competitors</td>
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Paper Organization

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<tr>
<th>Title</th>
<th>If your solution is based on some theories not well known, you can give an introduction at this section. Sometimes, it can be omitted</th>
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Describe your solutions or your algorithms here. It should be the bulk of the paper and it must provide sufficient information so that a knowledgeable reader can reproduce the experiment.

Note:
1. Please DO NOT describe your method in a way as a computerized algorithm, step1, step2…; instead, you are telling readers a story; it should be narrated in a logical way, full of theoretical analysis; you need to convince the readers why your new solution can work.
2. Use present tense for methodology-type papers.
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Experimental results are used to corroborate the efficacy or the efficiency of your method

Note:
1. You need to adopt the standard testing methods in your field; however, sometimes, you can design some scenarios to show the superiority of your method to the others in some special cases
2. It will be more convincible if some of the latest state-of-the-art methods could be compared
3. Cite source of data
4. Use figures and tables to summarize results
5. Explain setup clearly
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Try to avoid:
- Citing articles published only in the local language
- Excessive self-citation
- Citation of published journal papers is preferred over citations of conference proceedings or technical reports
Some General Tips to Write an Academic Paper

- Always keep in mind, how about if you are a reviewer?
  - How would you rate the paper if you are the reviewer?
- The whole paper should be clearly and logically expressed
- You can at first draft your paper in Chinese and then translate it into English
  - At most cases, if you find your paper is not clear or does not read well, it is not because of your poor English; it is due to your messy minds
- Spelling errors, typo errors, or grammar errors is forbidden
  - If I review such a paper, reject it directly without further reading
Some General Tips to Write an Academic Paper

- The whole paper should be neatly formatted
  - Formulas, equations, tables, figures, references etc.
  - I read so many manuscripts, encountering none without any of the above-mentioned issues
- The paper should be of the maximum possible length
  - If the page limit for a conference is 8, your paper should be of 8 pages
- The paper should have figures, tables, and plots
- Imitation is most effective if you do not know how to start
  - Preparing 3~5 eminent papers on your table; simulating their writing styles, organizations, and language
Some General Tips to Write an Academic Paper

- Record your own mistakes; eliminate them!
- Think about writing: 30%; writing: 70%
- About the language
  - Clarity, Conciseness, Correctness (accuracy)
  - Try to avoid repetition, Redundancy, Ambiguity, Exaggeration
  - If possible, invite one native speaker to polish your work
About Response Letter

- Carefully study the reviewers’ comments and prepare a detailed letter of response.
- Respond to all points; even if you disagree with a reviewer, provide a polite, scientifically solid rebuttal rather than ignore their comment.
- Provide page and line numbers when referring to revisions made in the manuscript.
- Perform additional calculations, computations, or experiments if required; these usually serve to make the final paper stronger.
The reviewer is clearly ignorant of the work of Bonifaci et al. (2008) showing that the electric field strength in the ionization zone of the burned corona is less than the space charge free field before the corona onset.

Thank you for your comment. However, we feel that the assumption in our model is supported by recent work by Bonifaci et al. (2008), who showed that the electric field strength in the ionization zone of the burned corona is less than the space charge free field before the corona onset.
Outline

 Overview
 Several Factors Deserving Consideration
 About Paper Writing
 About Oral Presentation
We Present Everyday!

- Not just giving formal talks
  - Discuss ideas of a project.
  - Influence a friend, colleague, or boss.
  - Tell people what you did, and why it matters.
  - Get people’s “mindshare”.

- Presentation skills can be acquired
What to Say and How to Say It

- Communicate the key ideas
  - Most new results are obtained by using a few key ideas or tricks, plus the application of standard tools and techniques.
  - Make sure that your talk emphasizes the key ideas and skips over what is standard, obvious, or merely complicated.

- Don't get bogged down in details
  - The audience would appreciate an overview of the paper so that they can determine whether the paper is worth reading.

- Structure your talk
  - Your presentation should be broken into several distinct parts, each with its own objectives and style.
General Tips for a Good Presentation

- Know your audience
  - Computer scientists or layman?
- Main eye contact
  - DON’T keep staring at screen or computer
- Minimize language difficulties
  - Speaking is different from writing; use simple and clear words
- Typing too many words is a BAD idea!
  - Don’t read from your slides.
  - Try to use graphical figures, flowcharts, tables, or even interactive demos (keeps the talk interesting)
- Avoid too many special PPT effects
General Tips for a Good Presentation

- Vocal skills
  - Passion & Enthusiasm

- Visual skills
  - Eyes
  - Body
  - Hands
  - Face

- Overcoming nervousness
  - Do the thing you fear and the death of fear is certain

- Humor
Paper
大大地有！
我搞出这些paper容易么！
Q&A