HOW TO WRITE A WORLD CLASS THEORETICAL PAPER

TIPS, TRAPS AND TRAVESTIES

Title Presenter Name,
Degree(s)

Elsevier Author Workshop
Date

Outline

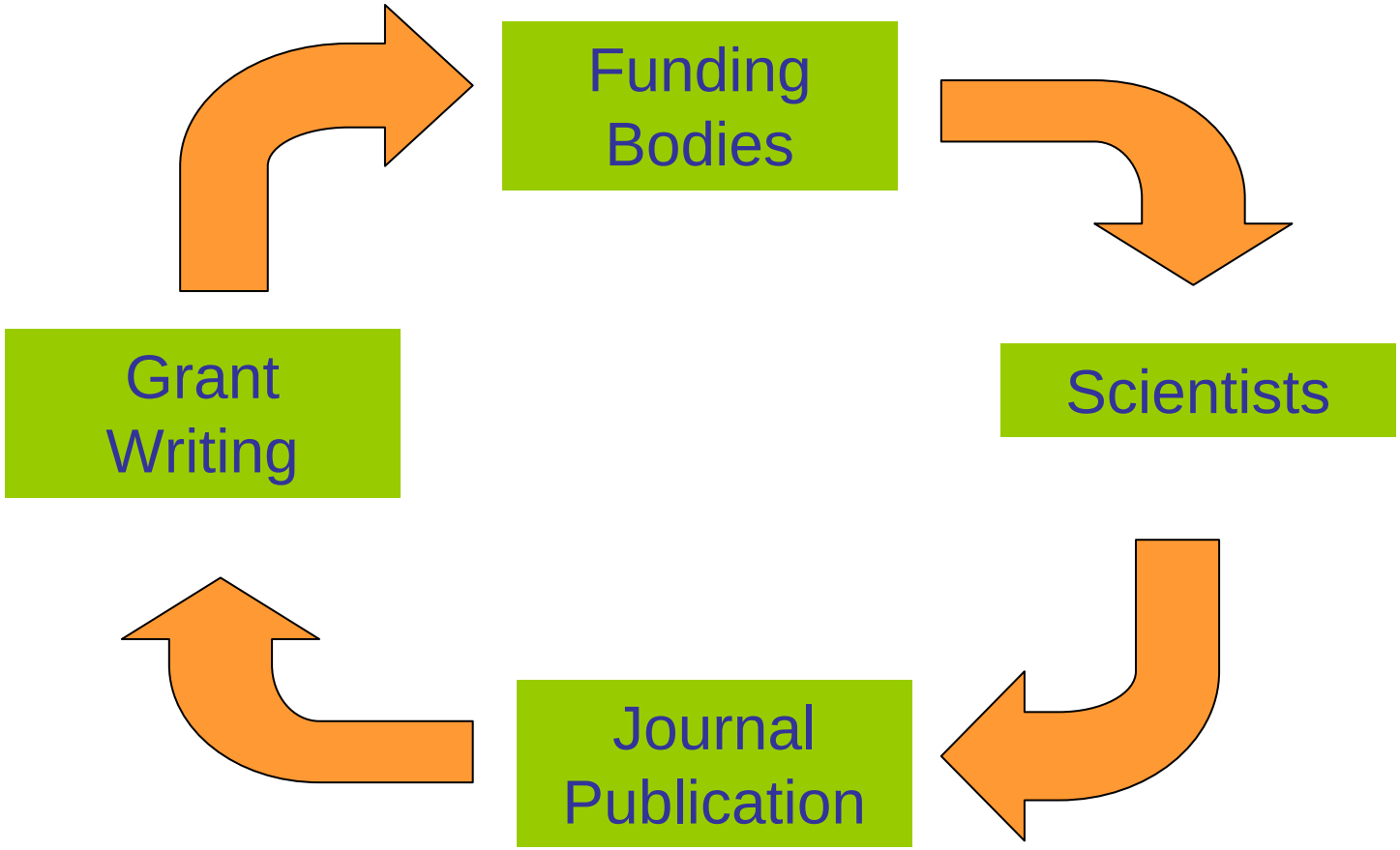
- To publish or not to publish…
- Writing a quality manuscript
  - Preparations
  - Article construction
  - Language
  - Technical details
- Revisions and response to reviewers
- Ethical issues
- Conclusions: getting accepted

To publish or not to publish…

Why publish?

- Scientists publish to **share** with the **research community** findings that **advance knowledge and understanding**
  - To present new, original results or methods
  - To rationalize published results
  - To present a review of the field or to summarize a particular topic

Publish or perish



Publishers do not want zero-cited articles

Editors now regularly analyze citations per article

"The statistic that 27% of our papers were not cited in 5 years was disconcerting. It certainly indicates that **it is important to maintain high standards when accepting papers**... nothing would have been lost except the CV's of those authors would have been shorter…"

– Marv Bauer, Editor, *Remote Sensing of Environment*

Publishers *do* want quality

WANTED

- Originality
- Significant advances in field
- Readability

NOT WANTED

- Duplications
- Reports of no scientific interest
- Work out of date
- Unreadable

"Just because it has not been done before is no justification for doing it now."

– Peter Attiwill, Editor-in-Chief, *Forest Ecology and Management*

Can I publish this?

- Have you done something new and interesting?
- Have you provided solutions to any difficult problems?
- Have you checked the latest results in the field?
- Is the result interesting or useful for others in the field?
- Do your findings tell a nice story or is the story incomplete?

If all answers are “yes”, then start preparing your manuscript.

Writing a quality manuscript

- **Preparations**

What type of manuscript?

Full articles / Original articles

Letters / Rapid Communications / Short Communications

Review papers / Perspectives

- Self-evaluate your work: Is it sufficient for a full article?
- Ask your colleagues for advice on your manuscript. Sometimes outsiders may see things more clearly than you.

Who is the audience?

- Do you want to reach theoreticians in your field, applied researchers, a mixture of both, or a more general audience? You will need to adjust information and writing style accordingly

- Journals, even in similar subjects, reach readers with different backgrounds

- Each journal has its own style; read other articles to get an idea of what is accepted

Which conference/journal?

- Consider:
  - Aims and scope (check journal websites and recent articles)
  - Types of articles
  - Readership
  - Related published topics (go through abstracts)
  - Average length of review period
  - Asking colleagues for advice

Sometimes it is necessary to lower one's sights or reformulate the problem

DO NOT gamble by scattering your manuscript to many journals

Only submit once!

International ethics standards prohibit multiple simultaneous submissions, and editors DO find out!

Format

- Consult and apply the list of guidelines in the “Guide for Authors”
- Ensure that you use the correct:
  - Length and page margins (stick to word and page limits)
  - Reference format (LaTex can do this automatically)
  - LaTex template if appropriate:

The article should preferably be written using Elsevier's document class 'elsart', or alternatively the standard document class 'article'. The Elsevier LaTex package (including detailed instructions for LaTex preparation) can be obtained from the Author Gateway's Getting Published with Elsevier: http://www.elsevier.com/latex

Consulting the Guide for Authors will save your time and the editor's

All editors hate wasting time on poorly prepared manuscripts

It is a sign of disrespect

Writing a quality manuscript

- Article construction

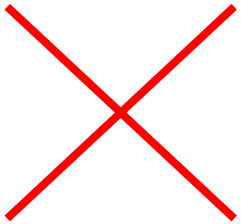
Title

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

DO	DON'T
Convey main findings of research	Use unnecessary jargon
Be specific	Use uncommon abbreviations
Be concise	Use ambiguous terms
Be complete	Use unnecessary detail
Attract readers	Focus on part of the content only

Title

A Central Limit Theorem for the Density of Particles in an Interactive Particle System in Three or More Dimensions and Upper Bounds for the Density of the most Populated Site and the Replica Overlap



Central Limit Theorem for a Class of Linear Systems

Authors and affiliations

Be consistent with spelling, full versus short names, full versus short addresses

Surnames: Pérez-García / Pérez / García

Middle Initial: Use consistently or not at all

First Names: Dave / David

Affiliation: Department of Statistics / Department of Statistics and Applied Mathematics

Abstract

The quality of an abstract will strongly influence the editor's decision

A good abstract:

- Is precise and honest
- Can stand alone
- Uses little to no technical jargon
- Is brief and specific
- Cites no references

Use the abstract to "sell" your article

Keywords

Keywords are important for indexing: they enable your manuscript to be more easily identified and cited

Check the Guide for Authors for journal requirements

- **Keywords should be specific**
- **Avoid uncommon abbreviations and general terms**

Keywords

Annealing effect on the structural and optical properties of a $Cd_{1-x}Zn_xS$ thin film for photovoltaic applications

S.D. Chavhan, S. Senthilarasu and Soo-Hyoung Lee

Keywords: Chemical bath deposition (CBD), $Cd_{1-x}Zn_xS$, thin films, photovoltaic

Bad keywords: Optical properties, X-ray diffraction, ITO, 350-800 nm

Introduction

Provide the necessary background information to put your work into context

It should be clear from the introduction:

- Why the current work was performed
  - aims
  - significance
- What has been done before
- What was done (in brief terms)
- What was achieved (in brief terms)

Introduction

DO

- Consult the Guide to Authors for word/page limit
- "Set the scene"
- Outline the problem and describe the results
- Ensure that the literature cited is balanced, up to date and relevant

DON'T

- Write an extensive review of the field
- Cite your own studies or those of colleagues disproportionately while ignoring contradictory studies or those of competitors
- Minimize or dismiss contributions made by others

Introduction

Nonlinear functional boundary value problems involving the product of two nonlinearities

B.C. Dhage and M. Kumpulainen

The FBVP (1.1) has not been studied in the literature earlier, so the results of this work are new to the theory of differential equations in Banach algebras. The special cases of the FBVP (1.1) have already been discussed in the literature by several authors as regards various aspects of the solutions (see Dhage [3] and the references therein). For example…

We study the FBVP (1.1) in this work, which is related, to some degree, to the study of two-point boundary value problems of ordinary differential equations.

Notation/Formulation

Notation should be mathematically precise and not overly complicated. Use notation commonly adopted in the field. Do not allow for the possibility of misinterpretation.

It is a common mistake to refer to “probability” and “expectation” without defining a probability space.This can be very confusing to readers!

In general, it is not a good idea to define functions using more than one letter, such as *sg*(**z,c**). This can easily get confused with *s***g*(**z,c**).

Readers must be able to understand the problem. Use mathematical notation to explain the problem, and restate (if possible) in English.

Theorems and Proofs

Main body of text should not include proofs

- Proofs are separated from the main body of text by the heading “proof” and the “qed” symbol or other clear marking at the end of the proof

- One should be able to read all theorem statements without looking at any proof. Authors often place proofs in a separate section

Equations

- An equation receives an equation number only if it is referenced later

- Math in sentences should be kept grammatical

If

$$x+y+z+10 = 73,$$

then

$$x+y+z = 63. \qquad (1.1)$$

Experiments

- For theoretical papers, experiments should illustrate and complement the main results

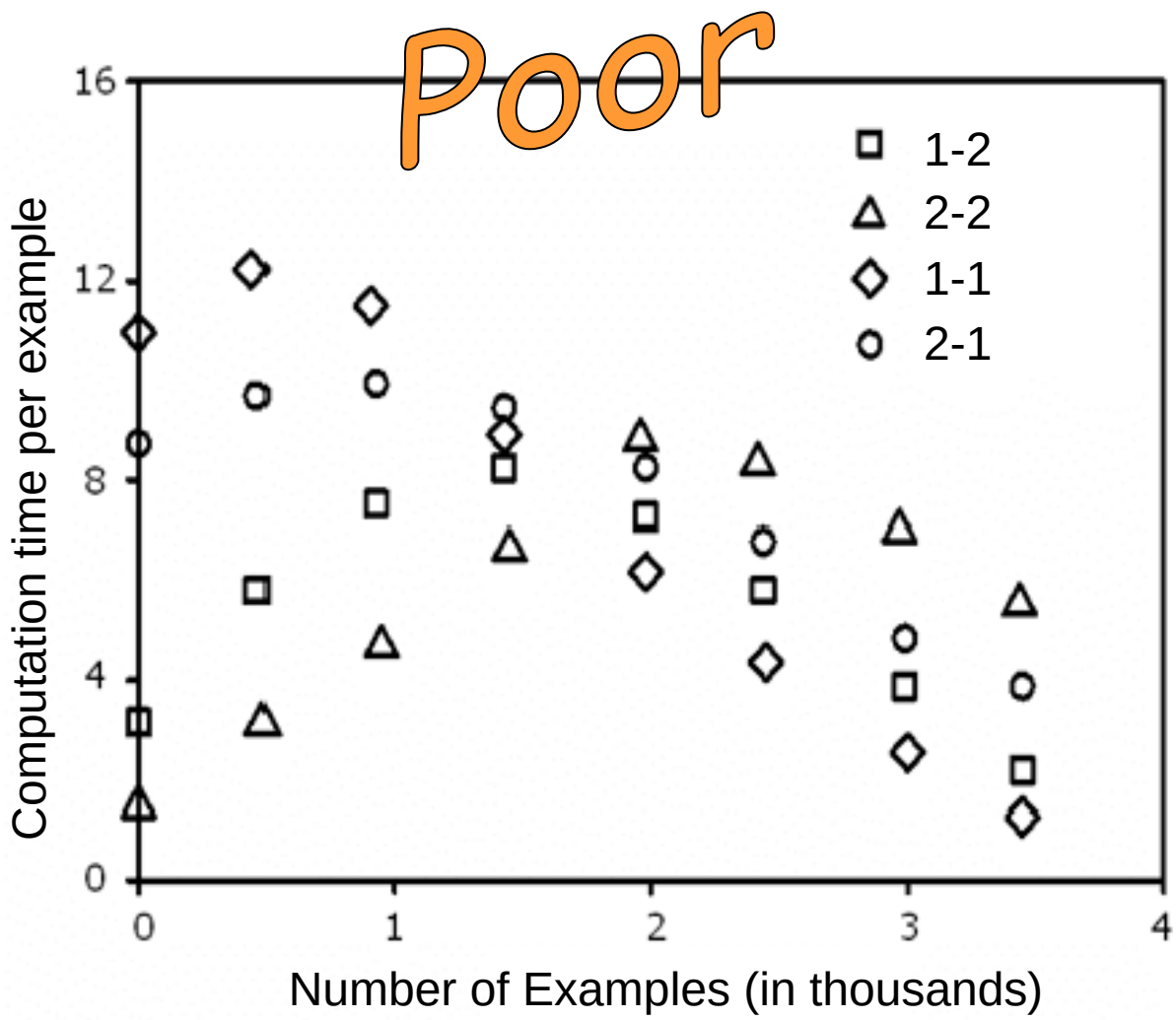
DO	DON'T
•Cite source of data •Use figures and tables to summarize results •Explain setup clearly	•Duplicate data among tables, figures and text •Use graphics to illustrate data that can easily be summarized with text

Graphics

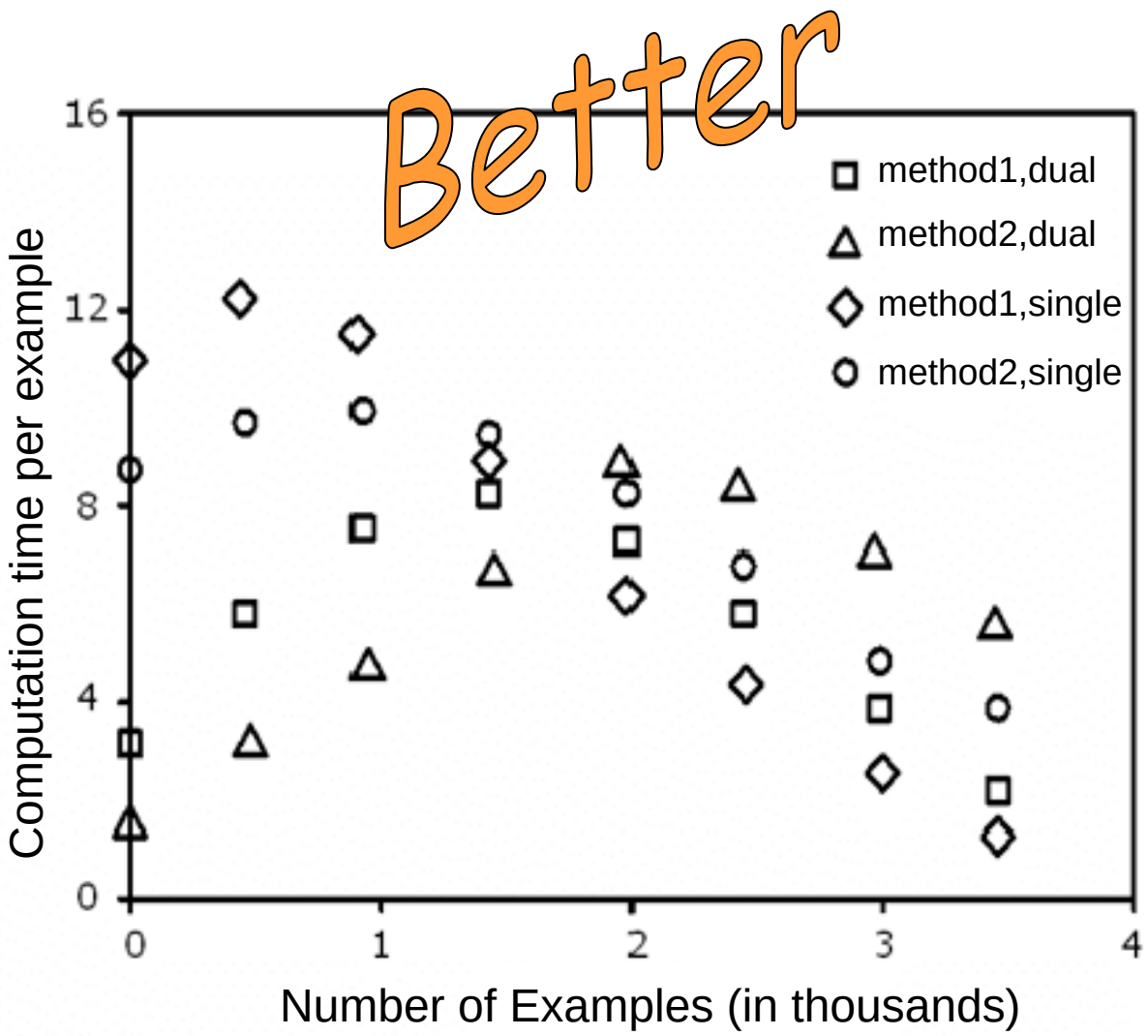
Figures and tables are **the most effective way to present experimental/computational results**

BUT:

- Captions should be able to stand alone, such that the figures and tables are understandable without the need to read the entire manuscript
- The data represented should be easy to interpret
- Colour should only be used when necessary
- Graphics should only be used to show essential data; summarize data in the text where possible

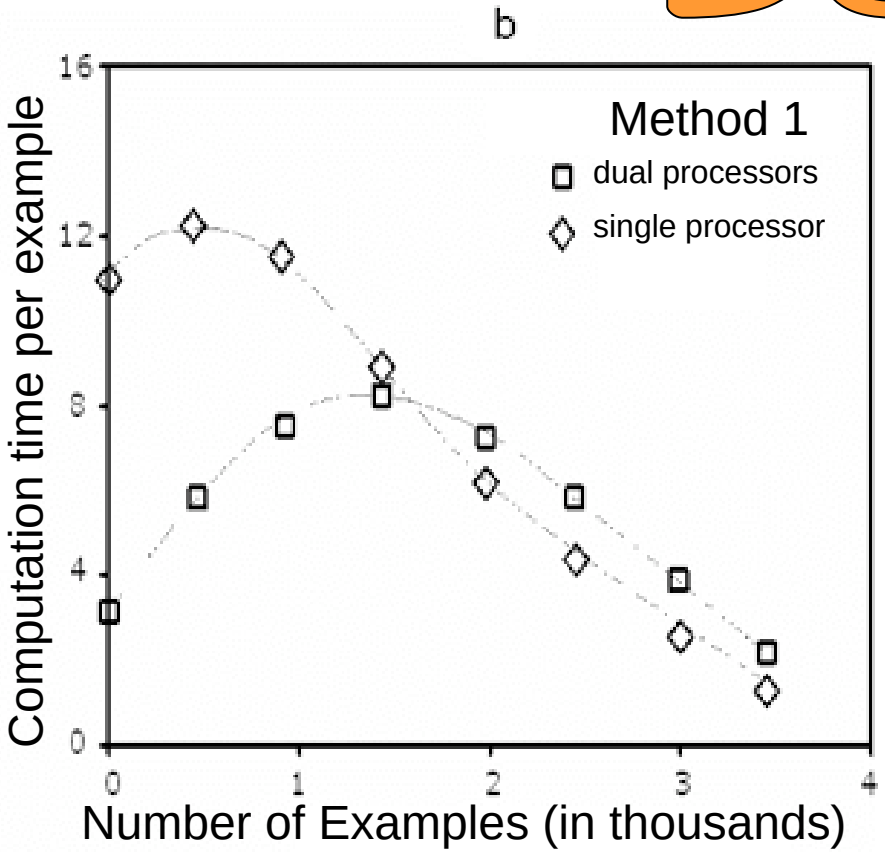


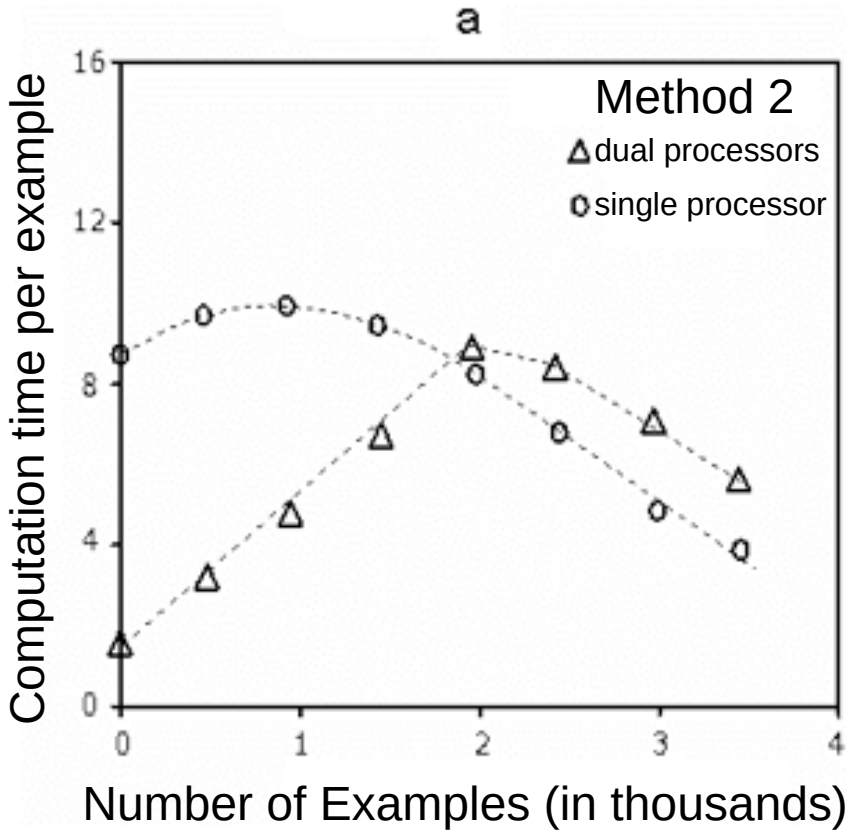
- **Legend is poorly defined**
- **Graph contains too much data**
- **No trend lines**



- **Legend is well defined but there is still too much data and no trendlines**

Best





- **Legend is clear**
- **Data is better organized**
- **Trend lines are present**

Conclusion

Put your results into **CONTEXT**

Summarize concisely

Describe how it represents an advance in the field

Suggest future directions and open problems

BUT

Avoid repetition with other sections

Avoid being overly speculative

Don’t over-emphasize the impact of your work

Conclusion

Gradient-based adjoint-variable optimization of broadband microstrip antennas with mixed-order prism macroelements

Dimitris I. Karatzidis, Traianos V. Yioultsis and Theodoros D. Tsiboukis

A systematic gradient-based methodology is presented to deal with the problem of design and optimization of microwave circuits. Unlike evolutionary computation algorithms that perform more extensive searches but are sometimes computationally cumbersome, the gradient-based scheme, proposed here, may require some more elaborate analytical preprocessing but is fast and easily provides optimal designs. This is clearly demonstrated in a series of examples,…

In our next work, we will compare gradient-based methodology to “evolutionary computation” algorithms, which are…

Acknowledgements

Acknowledge anyone who has helped you with the study, including:

- Anyone who helped with the writing or English, or offered critical comments about the content
- Anyone who provided technical help
- Anyone who supplied data or computational resources

State why people have been acknowledged and ask their permission

Acknowledge sources of funding, including any grant or reference numbers

References

Check the Guide for Authors for the correct format

Check	Avoid
•Spelling of author names •Punctuation •Number of authors to include before using “et al.” •Reference style	•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

References

Using LaTex makes citations much easier.

Your .bib file includes:

```
@article{FuBo75a,
author=     {Fu, King-Sun and Taylor L. Booth},
title=      {Grammatical Inference: Introduction and Survey -- Part I},
journal=    {IEEE Transactions on Systems, Man, and Cybernetics},
year=       1975,
month=      Jan,
volume=     {SMC-5},
number=     1,
pages=      {95--111}
}
```

When compiled it looks like:

King-Sun Fu and Taylor L. Booth. Grammatical inference: Introduction and survey – part i. IEEE Transactions on Systems, Man, and Cybernetics, SMC-5(1):95–111, January 1975.

References

Citations should be grammatically correct within the text of the paper

According to the Journal of Machine Learning Research:

Citations should not be used as nouns (the paper must read correctly with parenthesized portions omitted)

It is not correct to say “Using the method of (Smith, 1999), we...”

Instead, say “Using the method of Smith (1999), we...”

or “Using the method of partial discombobulation (Smith, 1999), we…”

Appendices/ Supplementary material

Information related to and supportive of the main text, but of secondary importance

Appendices include:

- Very technical proofs

Supplementary material includes:

- Data (images, video, genomic sequence data, etc.)
- Computer code

Will be available online

Writing a quality manuscript

- Language

"Journal editors, overloaded with quality manuscripts, are looking for any reason to reject even good science"

Thus, both the science and the language need to be sound

The three “C”s

Good writing possesses the following three “C”s:

- **Clarity**
- **Conciseness**
- **Correctness (accuracy)**

The key is to be as brief and specific as possible without omitting essential detail

Know the enemy

Good writing avoids the following traps:

- **Repetition**
- **Redundancy**
- **Ambiguity**
- **Exaggeration**

These are common bugbears for editors

Repetition and redundancy

Vary the sentences used when writing the abstract or describing findings at the end of the introduction

Don’t copy from other sections verbatim!

Avoid words with the same meaning

In addition, code was also implemented for…

After the training stage, processors were then…

Repetition and redundancy

Avoid circular sentences

In order to examine failure events in spatio-temporal context, geographic coordinates were assigned to each event, to observe the effects of neighborhood influence on power outage.

The reason for the work is described twice, in slightly different terms

Ambiguity

Ensure correct use of “which”, commas and hyphens

In “To check the last condition, we make use of the Triangle Inequality, for the 1-norm.”

The second comma should be deleted

“**Delayed reinforcement learning**” (reinforcement learning that is delayed)

has a different meaning from

“**Delayed-reinforcement learning”** (learning from delayed reinforcement)

Ambiguity

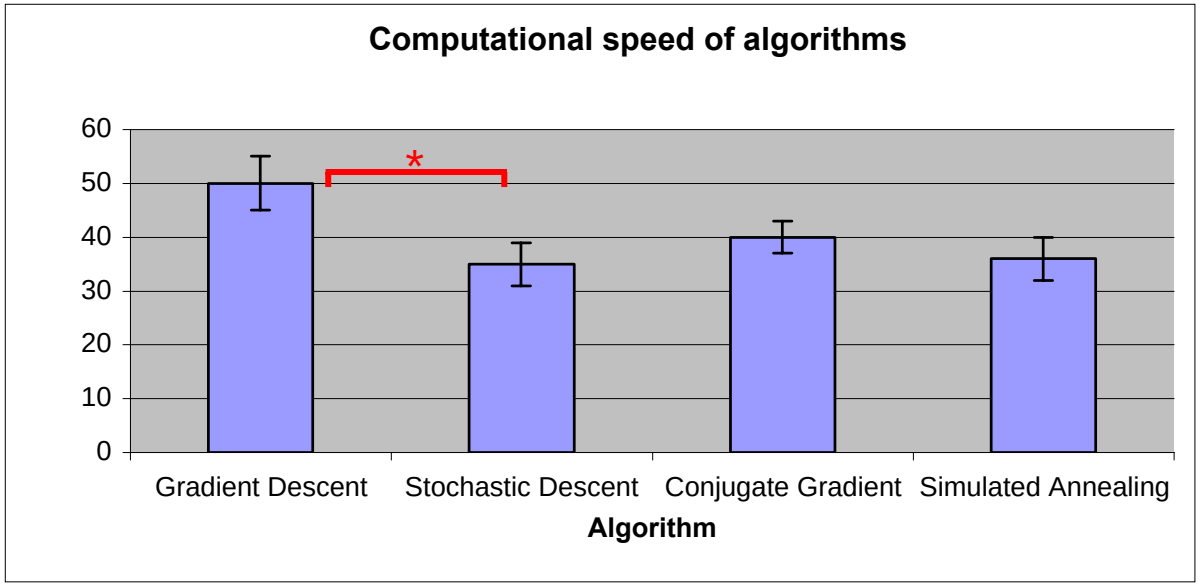
Ensure correct use of “which”, commas and hyphens

In “The variables converged to their theoretically-derived values, which showed…”

The “which” is used incorrectly, referring to the values rather than to the convergence of variables

“The variables converged to their theoretically-derived values, revealing that…” is correct

Exaggeration



"There was a massive decrease in the computing time between the gradient descent implementation and the stochastic descent version."

Beware of exaggeration but do indicate significance

Other common traps

Inconsistent tense – don't mix tenses in the same sentence

- After the first particles were tagged, other particles are…

Unbalanced sentences – make sure the clauses either side of "compared with" match up

- Star formation efficiencies in the Perseus cloud were compared with those in the Ophiuchus cloud…

Other common traps

Incorrect use of respectively – two corresponding lists are required

- The values of C parameters were 1, 10 and 1000, respectively

- The values of the parameters C_1, C_2 and C_3 were 1, 10 and 1000, respectively

Common LaTex traps

Quotes: Left and right quotes need to be placed manually:

- “non-linear” compiles to ”non-linear” (incorrect double right quotes) whereas ``non-linear” compiles to “non-linear” (correct)

Mathematics within the text should be in math font:

- Considering x and y compiles to Considering x and y
- Considering x and y compiles to Considering x and y

Only equations referenced in the text should be given an equation number

\begin{equation}\label{myequation} for numbered equations

\begin{equation*} for non-numbered equations

Language Editing Services

Your manuscript is precious, invest in it

- Specialist scientific and medical editing services are commercially available to polish the language in your manuscript prior to journal submission
- Rates start from $8 per page

More information can be found on the Elsevier website at:

http://www.elsevier.com/wps/find/authorsview.authors/languagepolishing

Language Editing Services

Recommended companies include:

- Edanz Editing
- Liwen Bianji
- International Science Editing
- Asia Science Editing
- SPI Publisher Services
- Diacritech Language Editing Service

Use of an English-language editing service listed here is not mandatory, and will not guarantee acceptance for publication in Elsevier journals

Writing a quality manuscript

- Technical details

Layout

- Check the Guide for Authors and use a LaTex template if relevant
- Keep line spacing, margins, font and font size consistent throughout – double-spaced 12-point Times New Roman is usually preferred
- Use consistent heading styles and capitalization throughout and no more than three levels of heading
- Number the pages if required

Length

Neural Information Processing Systems Conference:

"Papers departing from the formatting guidelines and all papers longer than eight pages will be rejected without review."

Consult the Guide for Authors for word and graphic limits

Abbreviations

- Define non-standard abbreviations on first use in both the abstract and the main text
- Check the Guide for Authors for a list of standard abbreviations that don't need defining
- Don't abbreviate terms used only once or twice in the entire manuscript – spell these out in full
- Acronyms: capitals not required in definition unless a proper noun or start of a sentence

full width at half maximum (FWHM)

NOT

Full Width at Half Maximum (FWHM)

Cover letter

- **This is your chance to speak to the editor directly**
- **Keep it brief, but convey the particular importance of your manuscript to the journal**
- **Suggest potential reviewers**

This is your opportunity to convince the journal editor that they should publish your study, so it is worth investing time at this stage

Cover letter

Include:

- Editor name – Address to journal editor, not generic
- First sentence – provide title, author list and journal name
- Briefly describe:
  - your research area and track record
  - the main findings of your research
  - the significance of your research
- Confirm the originality of the submission
- Confirm that there are no competing financial interests

Revisions and Response to Reviewers

Final checks

Revision before submission can prevent early rejection

What can I do to ensure my paper is in the best possible state prior to submission?

- Ask colleagues to take a look and be critical
- Check that everything meets the requirements set out in the Guide for Authors – again!
- Check that the scope of the paper is appropriate for the selected journal – change journal rather than submit inappropriately

Final checks

Revision before submission can prevent early rejection

What can I do to ensure my paper is in the best possible state prior to submission?

- If necessary, get a colleague or approved editing service to improve the language and ensure that the manuscript possesses the three “C”s
- Ensure that the literature cited is balanced and that the aims and purpose of the study, and the significance of the results, are clear
- Use a spellchecker

Post-referee revision

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

Post-referee revision

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.

Post-referee revision

- State specifically what changes you have made to address the reviewers' comments, mentioning the page and line numbers where changes have been made
- Avoid repeating the same response over and over; if a similar comment is made by multiple people explain your position once and refer back to your earlier response in responses to other reviewers or the editor

Post-referee revision

Clearly differentiate responses from reviewers' comments by using a different font style

Reviewer's Comments: It would also be good to acknowledge that geographic routing as you describe it is not a complete routing solution for wireless networks, except for applications that address a region rather than a particular node. Routing between nodes requires further machinery, which detracts from the benefits of geographic routing, and which I don't believe you have made practical.

Author's reply: We agree and will add an appropriate caveat. Note that for data-centric storage (name-based exact-match and range queries for sensed events), the storage and query processing mechanisms "natively" address packets geographically – without a "node-to-location" database.

Dr. Ramesh Govindan,
Professor, Computer Science Department, University of Southern California

Accepting rejection

Don’t take it personally!

- Try to understand why the paper has been rejected
- Evaluate honestly – will your paper meet the journal’s requirements with the addition of more material or is another journal more appropriate?
- Don’t resubmit elsewhere without significant revisions addressing the reasons for rejection and checking the new Guide for Authors

Accepting rejection

- **Suggested strategy for submitting elsewhere:**

- In your cover letter, declare that the paper was rejected and name the journal
- Include the referees' reports and show how each comment has been addressed
- Explain why you are submitting the paper to this journal; is it a more appropriate journal?

Ethical Issues

Unethical behavior "can earn rejection and even a ban from publishing in the journal"

Terry M. Phillips, Editor, *Journal of Chromatography B*

Unethical behavior includes:

- Multiple submissions
- Redundant publications
- Plagiarism
- Data fabrication and falsification
- Improper use of human subjects and animals in research
- Improper author contribution

Multiple submissions

•Multiple submissions save your time but waste editors' The editorial process of your manuscripts will be completely stopped if the duplicated submissions are discovered

"It is considered to be unethical…We have thrown out a paper when an author was caught doing this. I believe that the other journal did the same thing"

James C. Hower, Editor, *International Journal of Coal Geology*

Multiple submissions

Competing journals constantly exchange information on suspicious papers

You should not send your manuscripts to a second journal UNTIL you receive the final decision of the first journal

DON'T DO IT!!

Redundant publication

An author should not submit for consideration in another journal a previously published paper

- Published studies do not need to be repeated unless further confirmation is required
- Previous publication of an abstract during the proceedings of conferences does not preclude subsequent submission for publication, but full disclosure should be made at the time of submission

Redundant publication

- Re-publication of a paper in another language is acceptable, provided that there is full and prominent disclosure of its original source at the time of submission
- At the time of submission, authors should disclose details of related papers, even if in a different language, and similar papers *in press*

Plagiarism

"Plagiarism is the appropriation of another person's ideas, processes, results, or words without giving appropriate credit, including those obtained through confidential review of others' research proposals and manuscripts"

Federal Office of Science and Technology Policy, 1999

Plagiarism

"Presenting the data or interpretations of others without crediting them, and thereby gaining for yourself the rewards earned by others, is theft, and it eliminates the motivation of working scientists to generate new data and interpretations"

Bruce Railsback, Professor, Department of Geology, University of Georgia

For more information on plagiarism and self-plagiarism, please see:
http://facpub.stjohns.edu/~roigm/plagiarism/

Plagiarism

Plagiarism is a serious offence that could lead to paper rejection, academic charges and termination of employment. It will seriously affect your scientific reputation.

DON'T DO IT!

Unacceptable paraphrasing, even with correct citation, is considered plagiarism

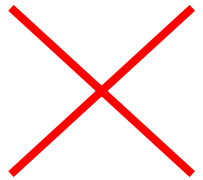
Paraphrasing

- **Original (Gratz, 1982):**

  Bilateral vagotomy resulted in an increase in tidal volume but a depression in respiratory frequency such that total ventilation did not change.

- **Restatement 1:**

  Gratz (1982) showed that bilateral vagotomy resulted in an increase in tidal volume but a depression in respiratory frequency such that total ventilation did not change.



Ronald K. Gratz. *Using Other's Words and Ideas*.
Department of Biological Sciences, Michigan Technological University

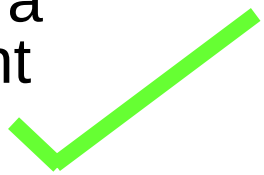
Paraphrasing

- **Original (Buchanan, 1996):**

  What makes intentionally killing a human being a moral wrong for which the killer is to be condemned is that the killer did this morally bad thing not inadvertently or even negligently, but with a conscious purpose – with eyes open and a will directed toward that very object.

- **Restatement 2:**

  Buchanan (1996) states that we condemn a person who intentionally kills a human being because he did a "morally bad thing" not through negligence or accident but with open eyes and a direct will to take that life.



Ronald K. Gratz. *Using Other's Words and Ideas*.
Department of Biological Sciences, Michigan Technological University

Improper author contribution

Authorship credit should be based on

1. Substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data
2. Drafting the article or revising it critically for important intellectual content
3. Final approval of the version to be published

Authors should meet conditions 1, 2, and 3. Those who have participated in certain substantive aspects of the research project should be acknowledged or listed as contributors. Check the Guide for Authors for guidelines.

Conclusion: Getting Accepted

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
Acknowledge those who have helped you
New, original and previously unpublished
Critically evaluate your own manuscript
Ethical rules must be obeyed

– Nigel John Cook, Editor-in-Chief, *Ore Geology Reviews*