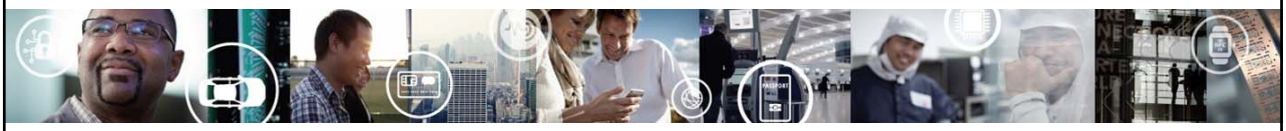
HOW TO WRITE A GOOD PAPER AND GET IT PUBLISHED

COLIN MCANDREW +



SECURE CONNECTIONS FOR A SMARTER WORLD

Warning

- this is a **very** boring presentation!
  - lots of words
  - few pictures
- do **not** use as an example for your conference presentation!
  - see ICTMS2018 “bonus” talk: How to Prepare and Make Good Presentations
- great inputs from ICMTS 2108 attendees are incorporated: thank all y’all!

1

Why Should You Publish?

- in academia, it is an expected part of the job
  - for students and Professors
- in industry
  - some companies pay you for publishing
  - mainly for personal satisfaction, peer recognition, career development/advancement
  - it looks good for your company
    - sends a message to customers/competitors about innovation and R&D investment
    - helps attract and retain top technical talent
    - projects that there is a rewarding and valued technical career path
- helps build a network outside of your company
  - potential future job opportunities

2

What Should You Publish?

- don't assume your daily work is **not** worth publishing
- don't assume your daily work **is** worth publishing
  - get to know what conferences and journals are interested in
    - to find appropriate targets for submission
  - become aware of existing state-of-the-art

- for research
  - should significantly advance the technical state-of-the-art
  - target archival journals, IEEE IEDM, VLSI, IEEE CICC, IEEE ISSCC
- for engineering application
  - should be practically useful
  - IEEE ICMTS is a terrific venue

3

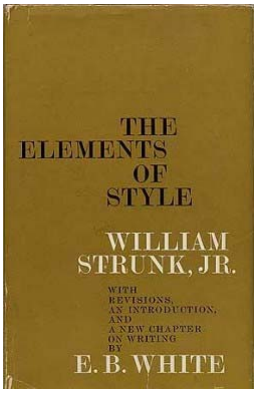
Do's

- keep abreast of conferences in your work area and what you can contribute
  - attend and participate even if you aren't presenting a paper
  - get to know people at, and get involved with, a conference
    - best way is to publish papers at the conference
- keep abreast of the present state-of-the-art
  - that way you can better evaluate the degree of advance of your contributions
  - reviewing conference and journal submissions forces you to do this
- reference original sources (not just your previous papers!)
- submit an abstract to a conference
  - not too much effort to write
  - forces you to write a full paper when accepted!

4

Do's (Continued)

- keep a list of potential topics you can write a paper on
  - I have done this, for over 30 years
  - work on these as time permits
    - yes, this involves time outside of work
- practice and hone writing and presentation skills
  - read "Strunk and White"
  - use the Oxford comma
  - good presentations make a significant positive impact
    - for you
    - for your company/institute
  - use internal company/institute forums to improve these skills



5

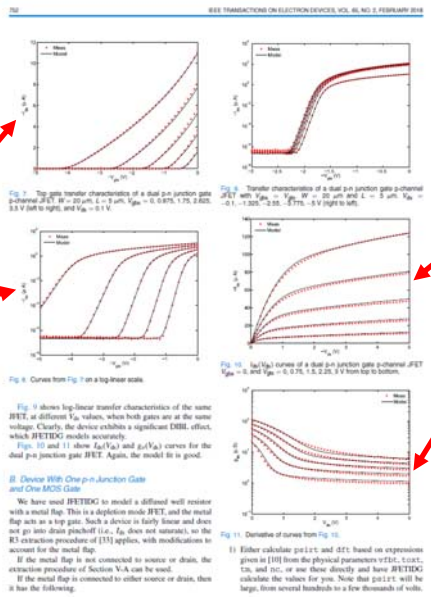
Do's (Continued)

- take pride in, and be very picky about, being perfect in **every** single detail
  - define all symbols and acronyms when used first
  - use the same font and style for symbols **everywhere**
    - in equations, text, figures, tables, captions
    - can be tricky if plotting package and typesetting package fonts are different
  - place imported pictures in exactly the same alignment in documents and presentations
    - it is distracting to have them shift around
  - when constructing drawings, schematics, etc. make sure all lines are aligned, snapped to grid, consistent lengths, ...
    - I use 1/10 inch grid, try to keep major lines on integer inches or 1/5 inches, it helps scaling
  - these small details make a difference, imperfections detract from technical impact

6

Examples

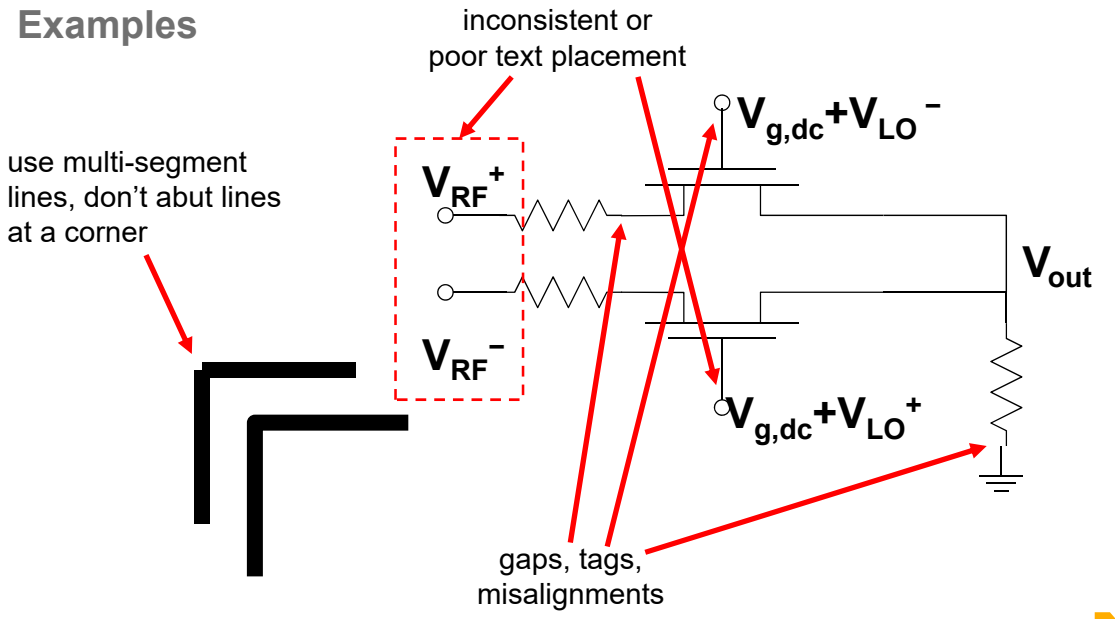
linear-linear and log-linear plots of the same data aligned vertically



$I_D(V_D)$ and $g_o(V_D)$ plots aligned vertically

7

Examples



8

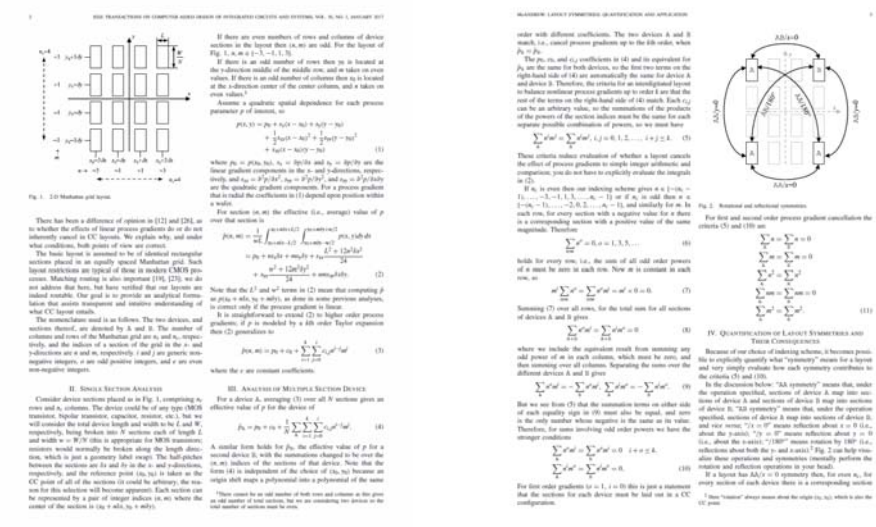
Recommentations

- use LaTeX for typesetting rather than MS-Word
  - looks **much** better and more professional
  - has no issues with figures moving around and destroying your document
  - many Windows versions freely available (I use MiKTeX)
  - with BibTeX it is really easy to set up, and re-use, references
- for figures use Matlab or matplotlib/python
- make your paper "look" like a paper
  - balance text, equations, and figures so it "looks" nice

9

Example

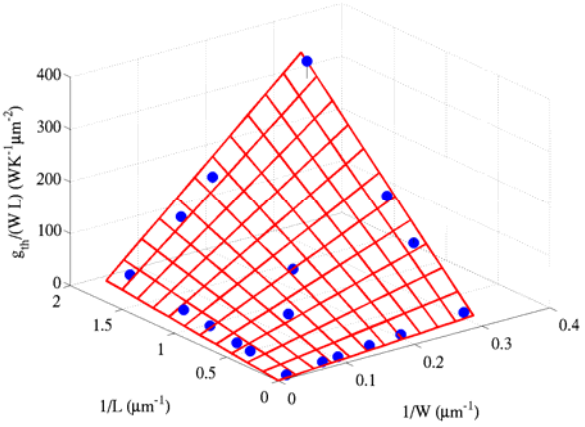
each page has a figure, text, and equations; put figures near where discussed in the text (the same page if possible)



10

Use Plots/Charts Rather Than Tables to Show Data

L	W	g_{TH}
60	0.65	5.733e-5
10.8	0.65	1.419e-4
7.2	0.65	2.026e-4
3.6	0.65	3.753e-4
60	0.98	3.789e-4
60	1.3	2.963e-5
3.6	1.3	1.883e-4



- if you do use tables, format numbers to align vertically and look nice
- make sure figures in a paper will print and show well in black and white
- use symbols for data, lines for model (on a finer grid to look smooth)

11

Do Not's

- do not submit junk
  - you look bad, your company looks bad, wastes reviewers' time
- do not separate your developments into MPUs (Minimum Publishable Units)
  - you look bad, your company looks bad
- do not publish the same material multiple times in multiple places
  - exception is review/invited paper to summarize a body of work
  - subsequent journal publication of conference paper is OK
    - requires "enhanced" and "more complete" version ("at least a third ... enhanced ... material")
  - previously archival journals were more widely available than conference proceedings
    - so publication of a good conference paper in a journal was OK
  - not so now with IEEEXplore, content must be differentiated
- do not "sell" a commercial product in the guise of a technical paper

12

Predatory Journals

- never, ever publish in predatory journals
  - if you have not received solicitations yet, you will
  - you will be asked to pay $$$, there is no peer review, it is a money making scam
  - you may even receive an offer to become an editor
- Beall's used to be the go-to source, but has been silenced
  - https://cabells.com/about-blacklist is the new best place to check
- academics at "lesser" US colleges have flooded the scam system
  - they got swept up in "publish or perish" tsunami
- if your institute/company counts publications, and not outlet/content, GET OUT!
- publish in reputable places, for example the IEEE
- never, ever publish in predatory journals

13

Tone of a Submission

- be technically correct at all times
  - if root cause is unknown, present all possibilities, not just one
  - speculate only when you have to, and be clear you are doing so
- be politically correct at all times
- by submitting a technical paper you are often implicitly saying that previous work is wrong, inaccurate, or in some other way has problems
  - do **not** use statements like “the previous work [X] is wrong because ...”
  - **do** use statements like “we improve on the previous work of [X] because ...”
- remember: the person reviewing your submission may be a person whose work you are building on, so be diplomatic ...

14

Content of a Submission

- follow guidelines for submission (format, length, ...)
  - many conferences ask for abstracts, full papers after acceptance
- don’t re-iterate all the past history of the field
  - reviewers and future readers should know it
  - graduate students have a tendency to do this (the information is, for them, relatively new)
- be very clear about what the advance is
  - passive descriptions may not make clear what is already known and what you have done
  - say “this submission advances the state-of-the-art because ...”
    - stands out to a reviewer going through 70 conference submissions
  - balance modesty/bragging and clarity

15

What Reviewers will Do and Say

- most conferences/journals try **really** hard to objectively evaluate submissions
- but not every reviewer will be an expert in the subject area of your submission
  - especially for conference submissions
- there may be misunderstanding of content and contribution
  - less likely with “this submission advances the state-of-the-art because ...”
- adopt “feedback is a gift” mindset
  - constructive criticism is always beneficial
  - if you act on it you will get published

16

Negative Reviews of Conference Submissions

- many have a “closed door” policy
  - no feedback on why a submission was accepted or rejected
- there are some complaints from authors about decisions
  - whacko's and psycho’s
    - web-based submission is increasing the number of these
    - in 1000’s of submissions I have been involved with there are only a few
  - disgruntled authors
    - some are legitimate, based on reviewers not understanding submission
    - some are just “sour grapes”
  - legitimate inquiries
    - really want constructive feedback

17

Negative Reviews of Journal Submissions

- easy decisions are clear cut reject and accept
  - there is a large gray area in the middle
- when pressed to make a decision it may be to reject
- if the reviews are weak and miss the mark, **push back**!
- be polite and diplomatic in your rebuttal
  - revise the manuscript as recommended if the comment/criticism is correct
    - thank the reviewer in your cover letter
  - clearly explain why other reviewers' comments are wrong
- if you are correct there is a **very** good chance your submission will be accepted
  - persistence can pay off
- do not "shop around" to lesser journals, this is detected and makes you look bad

18

Misunderstandings in Reviews

- reviewers/editors may not understand or may misunderstand what you have written
- do **not** respond with detailed analysis of how everything negative pointed out is, pedantically, already covered in places X, Y, and Z in the manuscript
  - reviewers have limited time for evaluations, as will eventual readers
- if reviewers had trouble understanding your submission others will too
  - even if it is technically correct
- the impact of your submission will be greatly diminished if published as-is
  - people will not easily understand your work
- "feedback is a gift"
  - improve the clarity of your manuscript, don't argue with the reviewers or editor

19

Chill Out

- if you get negative reviews, don't flame out
- sit on it, wait a day or two
- remember: feedback is a gift
- do this for your own papers too prior to submitting
  - come back after a day, two days, a week, … and you will see things you can improve
- critical comments can trigger new analysis/developments/papers from you!

20

For Non-Native English Speakers

- have your drafts proof-read by native English-speaking colleagues
  - more than one would be good
- ensure that senior authors with good English skills read/approve paper
  - especially at universities where "senior" author may not actually read it
- really embrace "feedback is a gift"

21

Miscellaneous

- unless journal/conferences requires it, place figures/tables with relevant text
  - do not place them all at the end
  - it is annoying to shuffle back-and-forth to correlate figure and description
- make sure the abstract is concise
  - what is addressed
  - how you advance the state-of-the-art
  - 3-4 sentences, do not take ½ column or make it an effective introduction
- structure per convention
  - (short) abstract; introduction; method/analysis/development; results; conclusions
- be concise, simple, direct … did I say read and adhere to Strunk & White?
- once you think it's perfect … sit on it, recheck with fresh eyes in a day or two

22

Final Recommendations

- you will learn better what to do by doing it, so do it and practice doing it
  - writing
  - presentations
- think like a reader/listener who is not as familiar with your work as you are
  - what have you assumed they know but likely do not?

1. make and continually update your list of possible paper topics
2. write and submit your papers as time permits
3. go back to step 1

23