

Wittgenstein's papers & Faraday's Talks:

Maxims for a milk-fed researcher

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Thanks to all my Guinea pigs er.. students

ICAPS Best
Dissertation
Award
Honorable
mention

ICAPS Best
Dissertation
Award 2009
winner

ICAPS 10 year
Influential
Paper
(Runner-up)

ICAPS 12 &
SOCS 12
Best student
Paper awards



15 Ph.D. graduates and 25 M.S. graduates

Wittgenstein? Faraday?



..What can be said at all can be said clearly, and what we cannot talk about we must pass over in silence.

--Tractatus

..and what if I am lactose intolerant?



The lecturer should give the audience full reason to believe that all his powers have been exerted for their pleasure and instruction

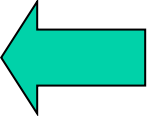
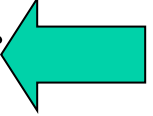
--Michael Faraday

Agenda

- Part I: Advice for writing good papers
- Part II: Advice for giving good talks
- Part III: Your comments/questions/sharing.

Process of Producing a Good Paper

Scope of this talk

- Think up a good idea ✗
- Think up a good way of evaluating it ✗
- Write a convincing paper explaining the idea 
- Give a talk to induce people to read the paper 
- Grow old and wait for a classic paper award. ✗

Disclaimer: A great idea can eventually transcend bad presentation;
but I tend to think posthumous rewards are way over-rated

Why is paper writing hard?

- We tend to think that what is obvious to us is obvious to the readers
- We tend to think that since we wrote term papers on other people's work for courses, writing about our own ideas should be easy
- We tend to focus on the perfection in the small instead of coherence in the large
- We tend to believe that reader/reviewer has way more patience for spotting diamonds in the rough that we ourselves have

Rao's

Maxims of Paper Writing

- Judge your paper the way you judge others'
- It is not about you(r head; but your readers')
- Don't be easy on yourself—it is not your “English” skills.
- No hook, no fish (or no claims, no readers)
- Say no to systematic search (over paper configurations) and local evaluation (over paper coherence)
- The better the draft, the better the comments
- Related work section is *not* expendable

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Judge your papers the way you judge others'

(or How paper writing is a little like Bathroom Singing)

- Paradox:
 - Beginning researchers tend to write some of the most cutting reviews
 - And yet seem to be too nice on their own papers
- Sort of similar to what happens in the bathroom singing
 - Except there is a remedy for bathroom singing—you just record your singing and listen to it for an eminently cringe-worthy experience
- Do the same thing for the paper
 - Read it like it is written by someone else

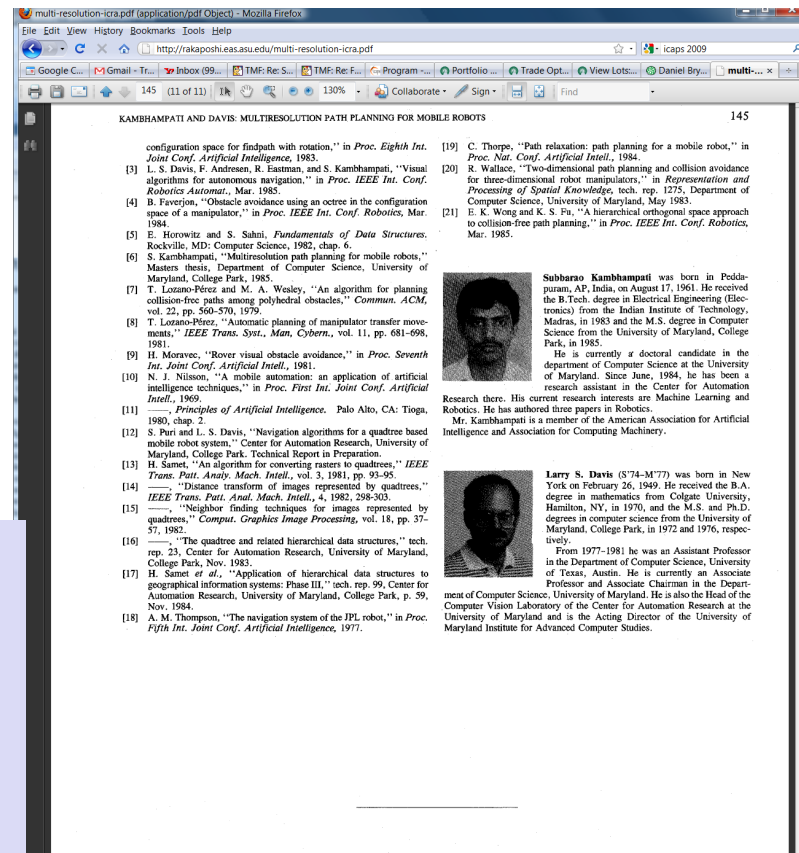
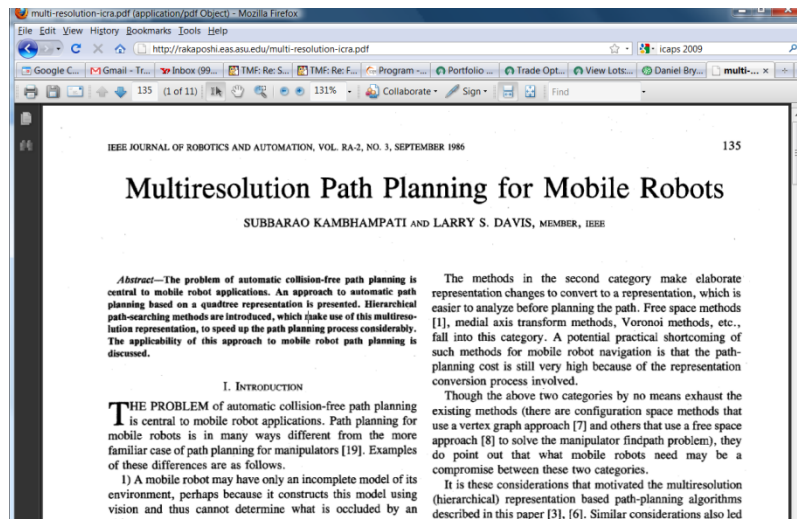
...and do *JUDGE* other people's papers
none of the “judge not lest ye be judged” nonsense

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It is not about you(r head; but the readers')



Rao's first draft was very nifty
and to the point.
Larry's comment: *remove the italics*
It took another 3 months and n-drafts
to get the magic back to the paper

Track the cognitive state of
your reader

Make sure that they are ready
to understand what you are
about to say..

If a lion could talk, we cannot understand him.
--Wittgenstein

Rao's

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Don't be easy on yourself—it is *not* your
“English” skills.

- Since English is the “lingua-franca” and most of seem to be as fluent in it as we are in French, there is a tendency to blame poor writing on new language.
- Often organizing the thoughts appropriately is a different issue from “foreign language” issue.
 - Ask yourself if you did a good job on organization—and be tough on yourself if you didn't
 - Content surprises are good; but organizational surprises are *BAD*

Rao's

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No hook, no fish (aka No claims, No readers)

- Too many beginning writers tend to be defensive about making any claims, lest they might be viewed as falling short
 - “*The nail that sticks out gets hammered*” belief
- But without claims, no one pays attention anyway
- Critical for the introduction to lay out your claims and their importance

Rao's

Maxims of Paper Writing

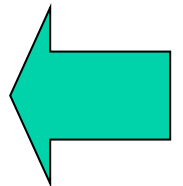
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Say **NO!** to systematic search (over paper configurations)

- You cannot systematically search over full paper configurations
 - Can only do Iterative improvement
- Have no allegiance to the intermediate drafts
 - Be ready to rewrite anytime to improve coherence [Ihrig story]

Say **NO!** to systematic search (over paper configurations) and local evaluation (over paper coherence)

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 - Can only do Iterative improvement
- Have no allegiance to the intermediate drafts
 - Be ready to rewrite anytime to improve coherence [Ihrig story]
 - Revision—not just Refinement
- Don't try to improve the paper by focusing just on specific sections
 - Once in a while, you will have to read the whole draft
 - ***AWAY*** from the computer
 - So you can fight the urge to change instantaneously



Rao's

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The better the draft, the better the comments (...or commenting is as much a hill-climbing)

- Tension:
 - Shall I give a poorly written first draft
 - Or a more polished fifth draft?
- Remember:
 - Just as writing is iterative, commenting is iterative and the depth of comments depends on the draft
 - With poorly written draft, most comments are likely to be syntactic. [Xuanlong Story]

Rao's

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Related work section is *not* expendable

- There is a tendency to make the related work section smaller and smaller as the camera-ready deadline approaches..
- Not a smart idea
 - Especially in many areas of AI such as planning where we are, in some ways, re-inventing the ambitiousness of yester years, in the context of increased scale-up of today
 - The new policies of keeping citations out of the page count is a great incentive mechanism..

Rao's

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Rao's

Part II: Maxims for Talks..

Why is it hard to give good talks?

- We tend to be defensive and assume that the talk must give all details of the work
 - The more technical the better—after all you don't want to be accused of being “shallow”!
- We spend way too much time crafting the powerpoint with exquisite animations (and too little time planning out what we want to say)
- We don't recognize the enormous cognitive toll conferences extract from the audience
 - Fast change in topics every 15-20 minutes
- We tend to talk to ourselves (without tracking the audience's knowledge state)
- We have heard way too many boring talks and think that is the way it has to be..

Rao's

Part II: Maxims for Talks..

- Why and What is more important than how
- Slides are a prop; *you* are the main show..
- Track the knowledge state of your audience
- Show conspicuous enthusiasm for your work

Rao's

Maxims for Talks..

- Why and What is more important than how
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Why & What is way more important than How

- The talk is a 15-20min advertisement to get the people to read your paper (and hopefully build on it and may be even cite it 😊)
- They can always read up the “how” details, but won’t bother checking out the paper if they don’t understand “why” and “what”
- **Why:** Why are you doing this? Why is this important given what already exists?
- **What:** What exactly are you trying to accomplish?

Rao's

Maxims for Talks..

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Slides are Props... You are the main show..

- If slides were the main show, all conferences would be way more lively spectacles..
- Mediocre slides with a great speaker trumps great slides with a mediocre speaker
- 50% time preparation of individual slides and 50% time thinking of the glue/flow across slides

Tip: Avoid starting with an overview slide!
End with Conclusions slide—not a big
“Questions?” slide

Rao's

Maxims for Talks..

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Track the Knowledge State of your Audience

(aka It is not about you(r head; but your listeners')

- Talk to the audience; not to yourself!
- Keep track of the picture you are painting in *their* heads
- Explicitly make backward and forward references to give the audience a chance to recover their bearings..

Rao's

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Show Conspicuous Enthusiasm

- Conferences exert an enormous cognitive toll on the audience
 - They need to shift attention every 15-20 minutes for something completely different.
- Most conference speakers “go through the motions”
 - The “nail that sticks out gets hammered” belief again..
- Change this! Be excited! Wake them up..



The lecturer should give the audience full reason to believe that all his powers have been exerted for their pleasure and instruction

--Michael Faraday

Rao's

Maxims Summary

Good Papers

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Good Talks

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