

Some Comments about Doing CS Research

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ECS 293 for Matt Farrens
3:10-4:00 in 1 Wellman

- Personal perspective
 - Biased to being me
 - Biased to my area
 - Biased towards doing "first-tier" research
- Pessimistic perspective

Being a CS graduate student is about

1. Learning to do CS research.
2. Doing it.

at some level ...

all the rest is noise.

Why do CS research?

1. **Intellectual**—To advance science or technology
2. **Personal**—You are driven to do it (as an outlet to creativity)
- ~~3. **Ego** — I must be really smart (no better way to stroke your ego)~~
- ~~4. **Social**—To advance social goals (I don't buy it)~~
- ~~5. **Strategic**—As a stepping stone to where you want to be (I don't like it)~~
6. **Boredom**—For fun (why not !?)

What is your research?

Your research is your papers [in some areas, certain artifacts other than papers are *also* your research]

- Cor: your research is **not** your:
 - projects,
 - grant proposals,
 - ideas,
 - skills,
 - whom you know,
 - whom you're working with,
 - ...

What is a paper, anyway?

~~A snapshot of your thinking~~

~~A line on your vita~~

Glyphs against a page

1. Ink on a piece of paper
2. Marks on a computer screen
3. The pdf/ps/dvi that becomes (1) or (2)
4. The TeX that becomes to (1), (2), or (3)

Versions of your paper

Full version (on web)

Any length. The version I increasingly consider as definitive

Proceedings version

Typically 10-15 pages allowed

Journal version

Increasingly, doesn't exist

I regard it as **one paper**. When possible, make it one LaTeX file

If your work is your research
and your research is your papers
and your papers are glyphs ...

then you better focus on those glyphs!

- I reject the thesis that there is a important distinction between the ideas and the presentation; "the presentation is the thing"
- ~~Sloppy writing is a sign of sloppy thinking~~
- Sloppy writing is sloppy thinking

= what is a good paper

What is good research?

- Ground-breaking work (opens up a new line of work, people follow) (nicest place to be long-term)
- Good incremental work (best bet as a grad student?)
- Useful work
- Socially-redeeming work (unlikely in our field)
- Aesthetically pleasing work
- Starts from (and leads to) good questions
- Timely
- Not published in "LPU's"


What is good research, cont. (*a postori view*)

- **num-of-references-to-your-papers**
a better indication of how you're doing than
num-of-papers (although far from perfect)
- Doing a few good papers much better than
doing lots of mediocre ones.
- **Most papers worthless** (nobody remembers them /cites
them / gives a damn about them)

<http://citeseer.nj.nec.com/cs/>

<http://www.informatik.uni-trier.de/~ley/db/>

What it takes to do first-rate research: personality characteristics

- 
1. Dissatisfaction
 2. Good taste
 3. Intuition (including the ability to guess how hard is a problem and how worthwhile a solution will be)
 4. Creativity
 5. Persistence (to the point of obsessiveness)
 6. Ability to suspend doubt (a kind of meditation)
 7. An open mind
 8. A suspicious disposition (curiosity)
 9. Intelligence

Another View of What it Takes to do first-rate research:

1. Time
 2. More time
 3. Then more time
 4. Ideas
 5. Skill in writing
- Maybe 200—1000 hours for a first-rate paper?
Note: Additional authors usually do **not** reduce
time/author

More about writing

1. Write, rewrite, throw-away, write, rewrite, rewrite, throw away, rewrite, ...
2. LaTeX skills
3. Aesthetic sensibilities

Science is about communications.

It is rude to put out sloppy work.

Your papers belong on the web.

in my opinion, you own your paper, all versions of it, there is no legitimate sense in which anyone has a right to try to restrict where you place it.

A few more hints

1. Don't immediately try to see what other people have done
2. Look at problems sideways
3. Move problems to the back of your head
4. Work on multiple problems at a time (probably two?)
5. Write as you do your research, not after (to the (minimal) extent that this means anything)
6. Find the right work environment for you
(me: flat, clear desk; silent room; mechanical pencil with soft lead (0.5mm), a few differently colored pens, a laptop computer (possibly with internet connectivity turned off), no distractions)
7. Beware of token-management, and doing backups