Challenges, Problem Selection, and Impact:
A Biased Perspective on PhD Studies

Alexandra Olteanu
Social Computing Researcher
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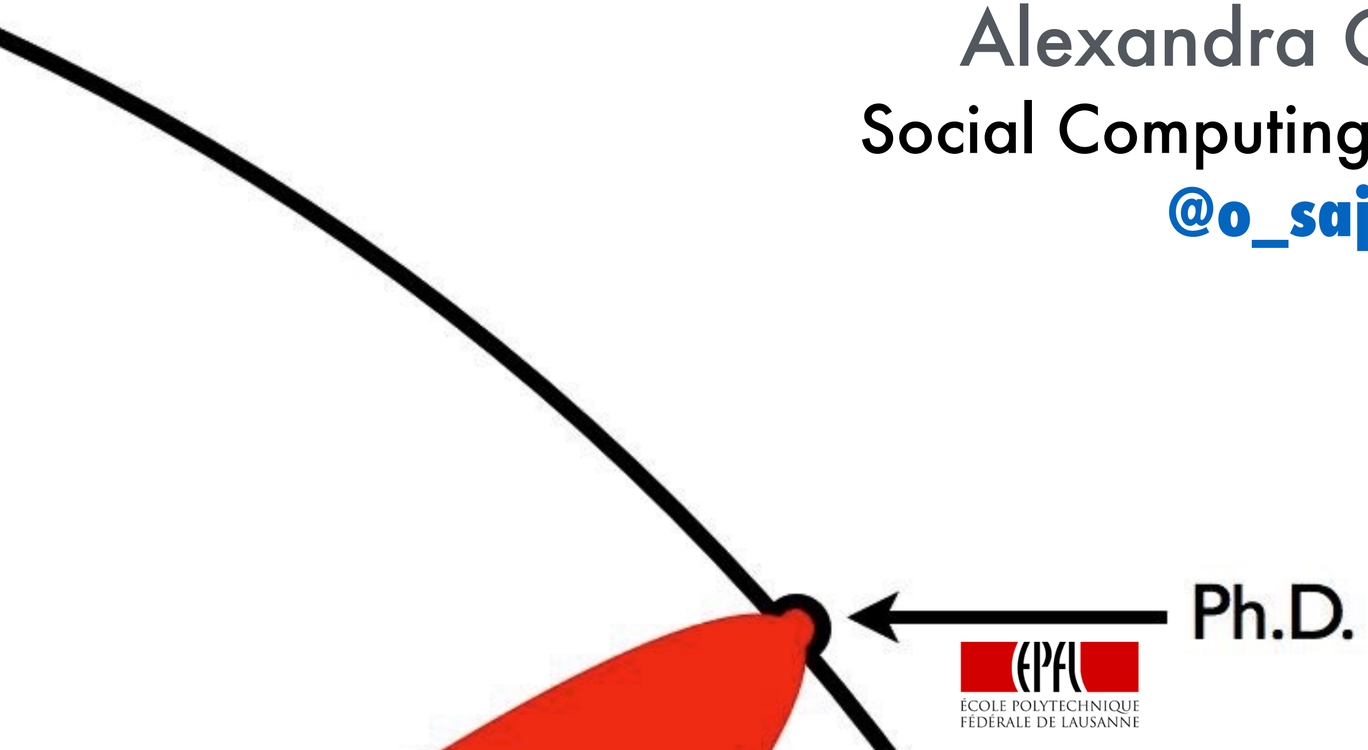

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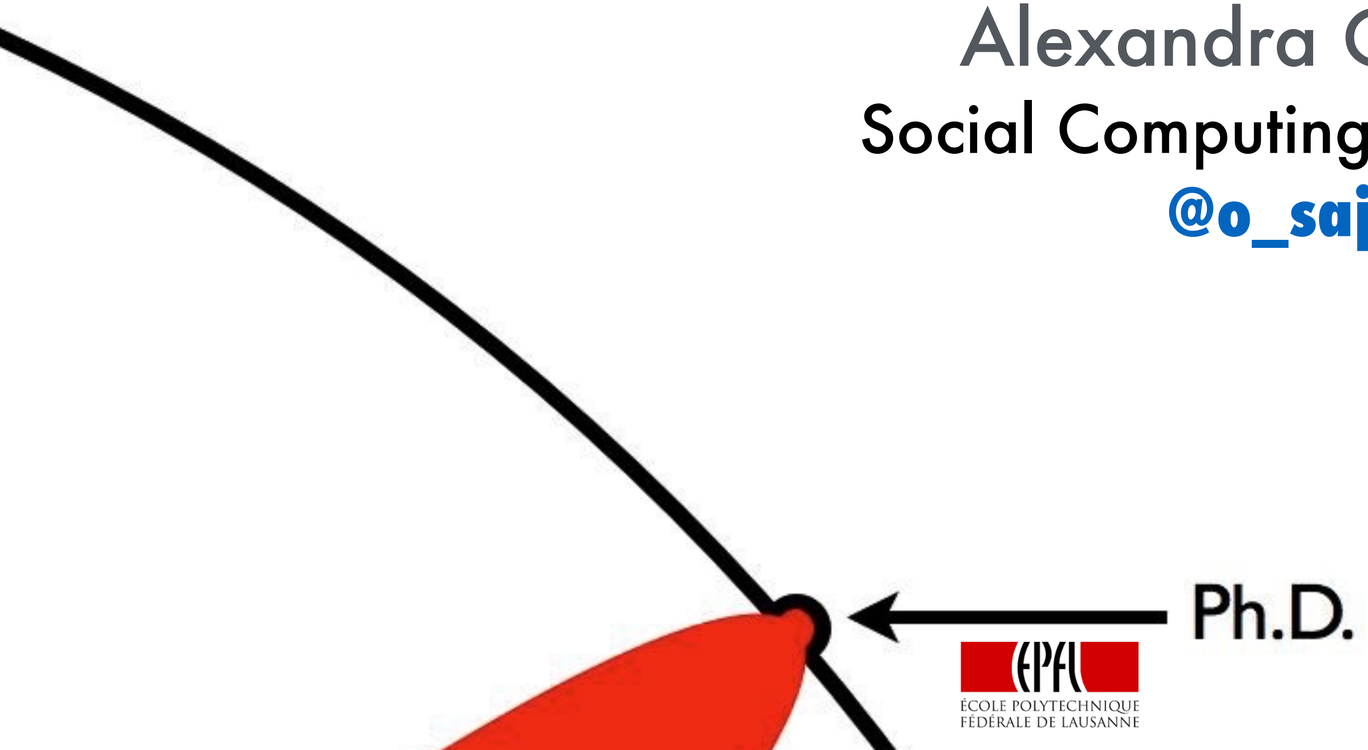

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The Illustrated Guide to Ph.D. by Matt Might

All it matters is to keep pushing!

Source: http://matt.might.net/articles/phd-school-in-pictures/IllustratedGuidePhD-Matt-Might.pdf

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My Topical Evolution

B.Sc. Engineering/Specialization in System Programming

kernel programming, compilers, distributed programming, etc.

2 x **M.Sc.** Parallel and Distributed Computer Systems

P2P Social Networks are feasible from an architectural standpoint

Ph.D. it's complicated

started working on web credibility

slowly shifted towards social networks and recommender systems

now interested in using computational tools for social good

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Quantifying My Topical Evolution

- Started my Ph.D. in September 2011
- Raw counts:
  - 7 full papers (+ 1 forthcoming survey paper)
    - CSCW'17/'15, ICWSM'15/'14, WISE'14, ECIR'13, CIKM'12
  - 6 Others (demo, workshop, symposia, extended abstract, tutorial, etc.)
    - ICWSM'16, AAAI Spring Symposia'16, CHI'13, ICDM'12, EuroSys'12
  - 2 Best Paper Awards
  - 1st try acceptance rate: 85% (90% before my private defense)
  - 18 co-authors
- CrisisLex.org, released over 30 data collections

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What Sort of Talk is This?

Topics

PhD Challenges

Collaborating

Problem Selection

Impact

PhD in Phases

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How?

Serious

Representative

Big/Actionable Insights

Data Mining

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How?

Don't take yourself too seriously!

Representative

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Just my personal, biased perspective

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Applications of Data Mining

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Challenges (& Opportunities) in …

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…the Life of a PhD Student

Deadlines

Writing

Talks

Grading

TODOs

…the Life of a woman PhD Student

Deadlines

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Story of My (PhD) Life

I don’t like deadlines :’-(

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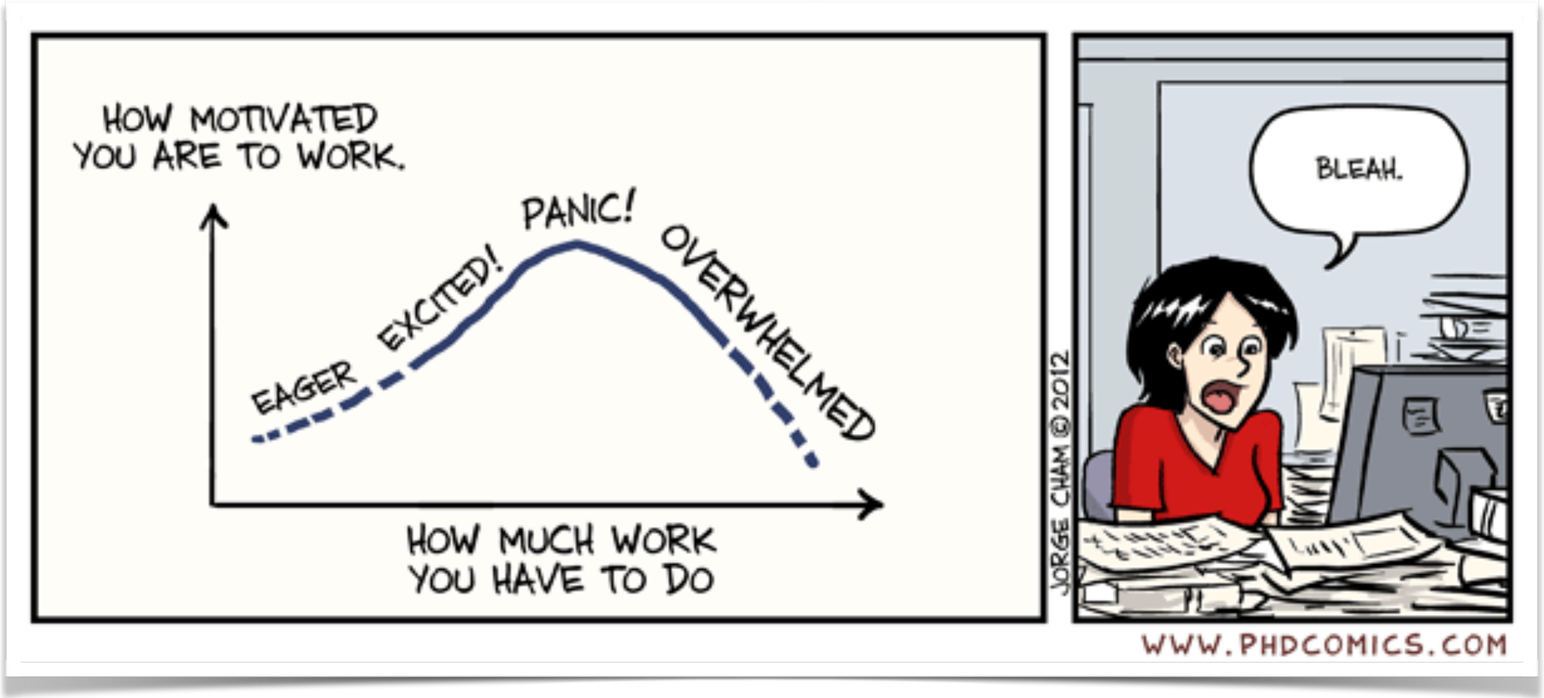
Story of My (PhD) Life

I don't like deadlines :'-(

...but I would have been so much less productive without them ...



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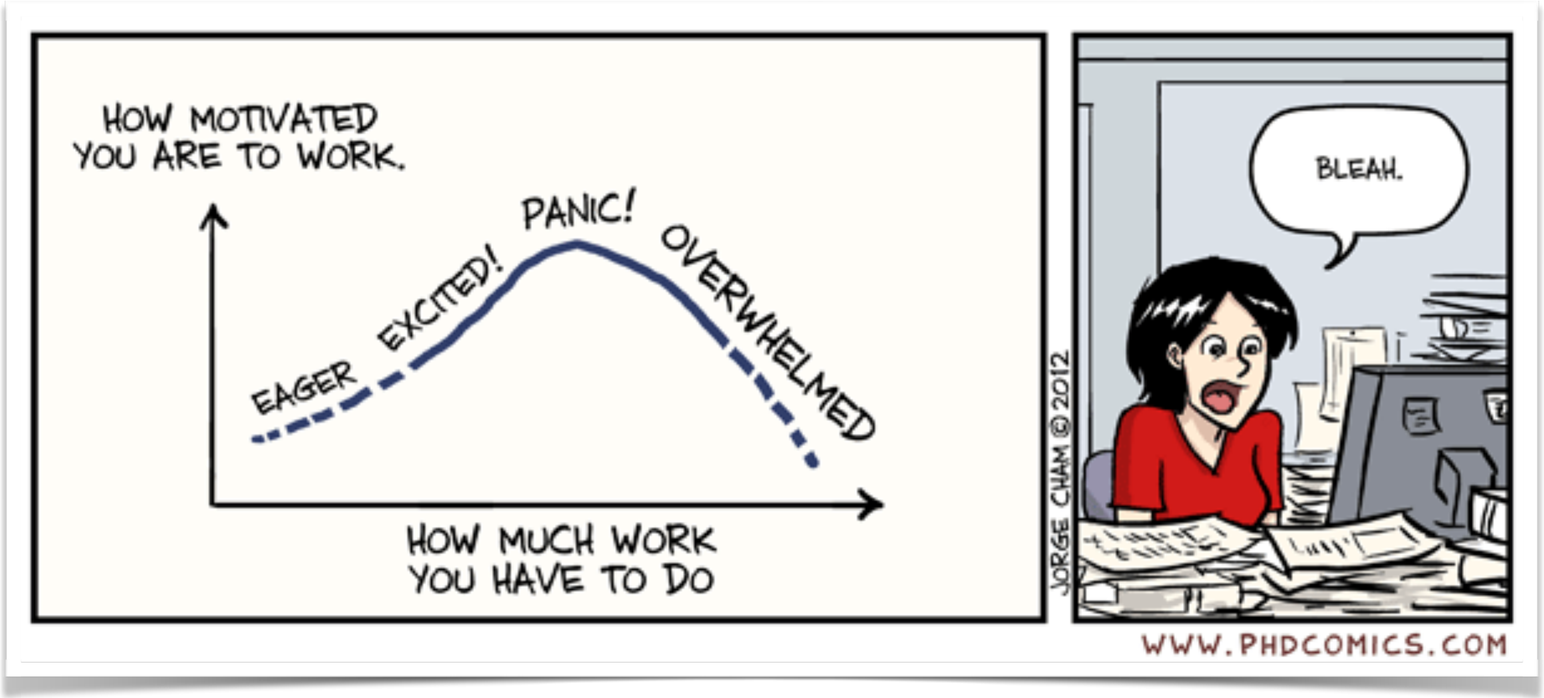

Use them wisely!

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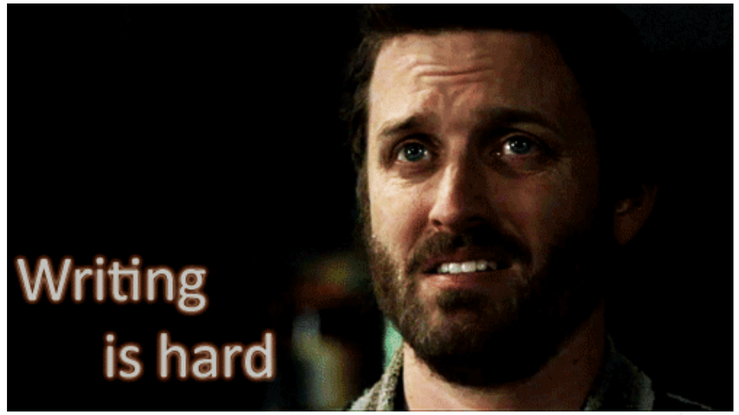
Writing Is Hard, But …

You are responsible for properly communicating your work.

Copy editing is not fun, so **be kind with your advisor** and senior colleagues.

It gets better in time: **the more you write, the better you write**.



Dry-runs, Damned Dry-runs & Speaker Notes

- Rely on well-rehearsed spontaneity,
- or on speaker-notes based spontaneity
- Synchronized animations are better than the laser pointer
- My speaker notes contain <click> marks for animation builds

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Put <u>mathematical formulas</u> on slides iff …

- you spend over 30 seconds for each variable, and
- your audience have seen them before, and
- your are an *one-(wo)man-show*

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Put mathematical formulas on slides iff …

- yo… …e, and
- …efore, and
- …your are an one-(wo)*man-show*

Most people just can't parse them in too little time.

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Dry-runs, Damned Dry-runs & Speaker Notes

- Rely on well-rehearsed spontaneity,
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Optimize for clarity, not precision.

Put <u>mathematical formulas</u> on slides iff …

- yo[illegible]e, and
- [illegible]before, and
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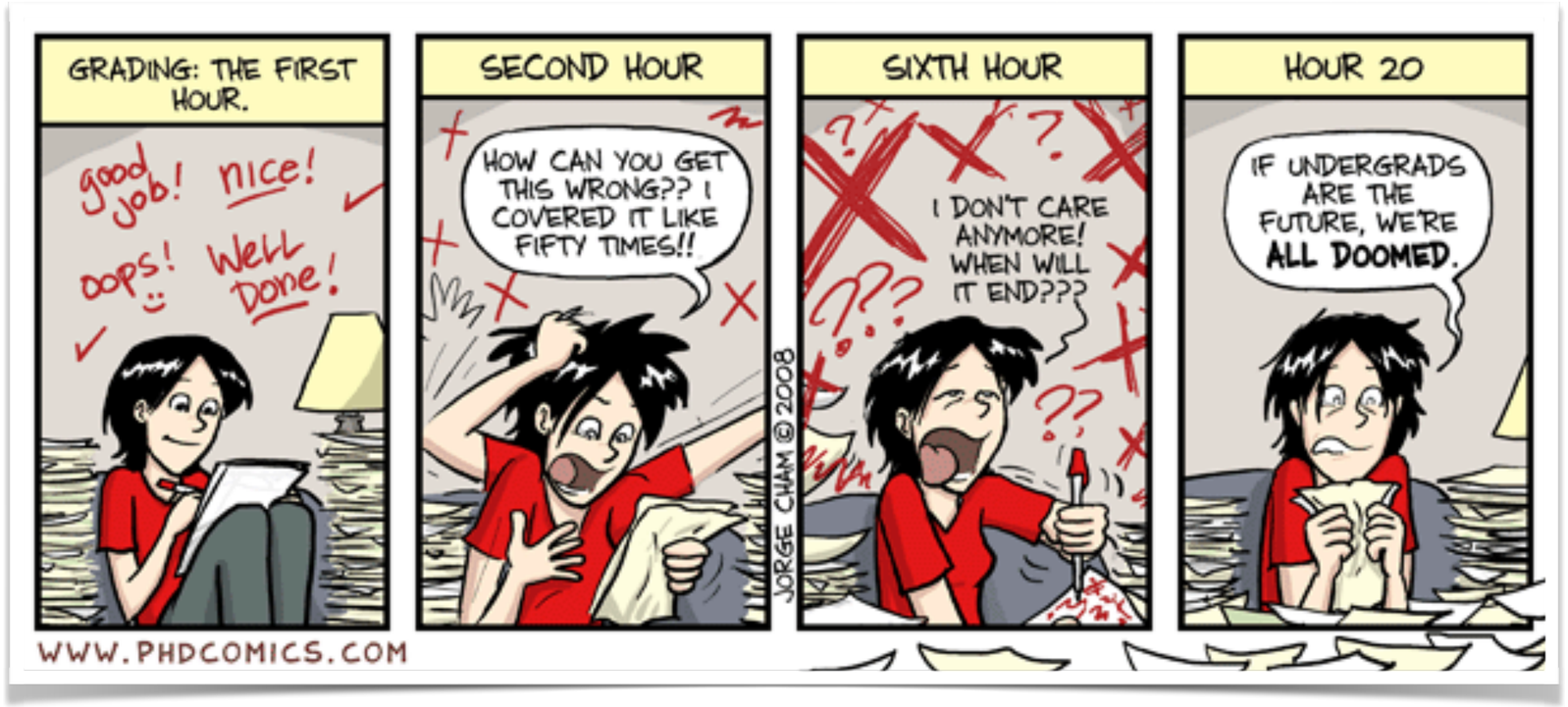
Ohh, the Joy of Grading



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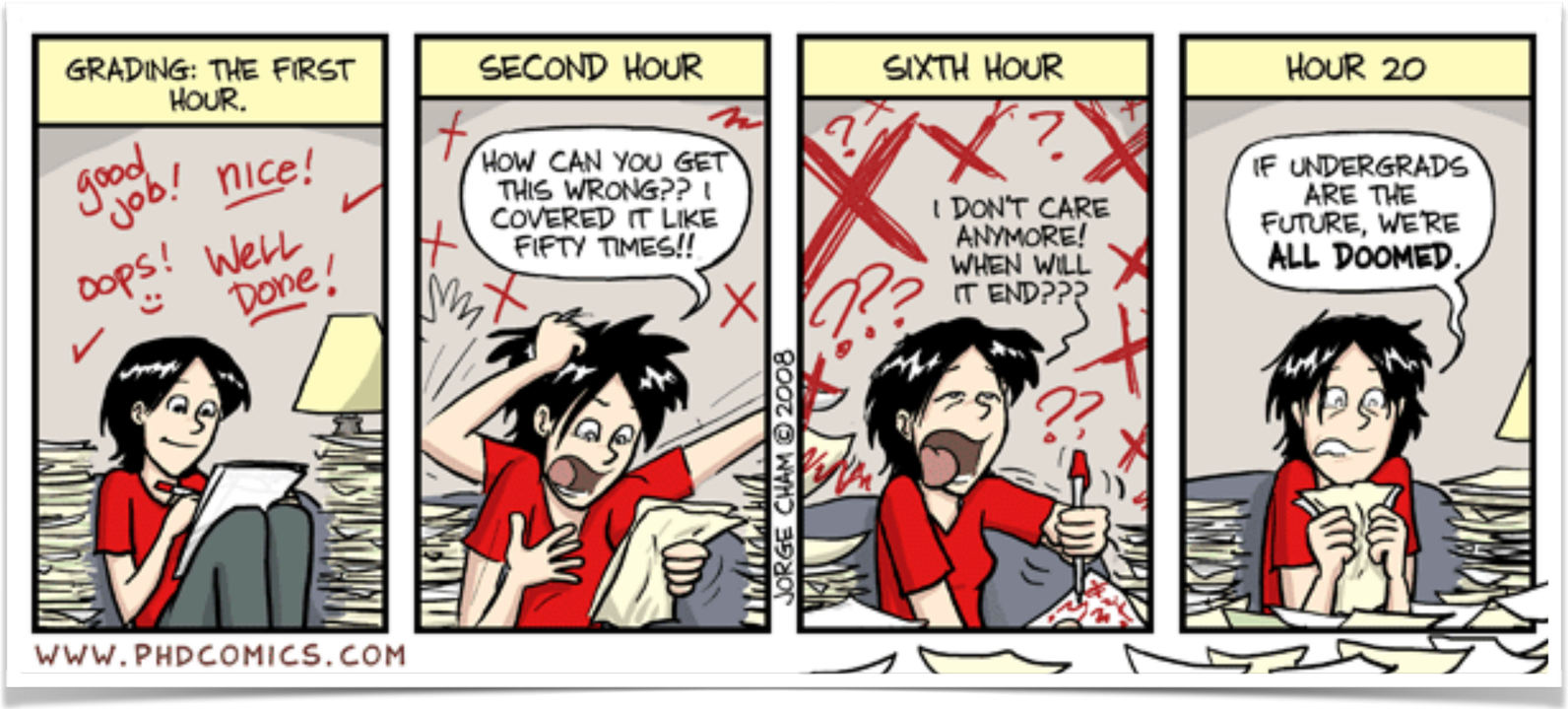
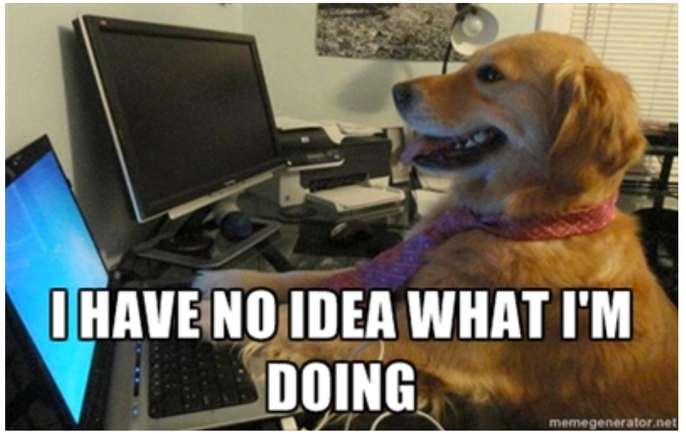


...but helpful whenever
you feel like an impostor



When You Have Too Many Things TO DO

Worry no more.

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When You Have Too Many Things TO DO

Worry no more.

Make a TODO list!

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Collaboration Is Key.

Collaborators

- Advisor(s)
- Outside mentors
  - from internships
  - shared interests
  - visiting professors
- Lab mates
- Students

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Look for diversity in backgrounds, and respect their perspective.

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Finding Mentors

- Remember
  - they are busy
  - they have their own priorities/interests
- Align your goals with their interests
- Do not overestimate their benefits
- They can help with more than research
  - networking, support, endorsement, etc.

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But, keep them accountable for the things they commit to.

Be a Mentor

- Take their interests into account
- Advisor shoes
- Put them first
  - review their work ⇒ will help you write better.
  - do dry-runs with them ⇒ will help you make better presentations.
- You learn better when you explain it to others

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Offer help, do not expect them to always know what they need.

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Receiving Feedback: A Few "Do not(s)"

- Don't be critical of how people give you (solicited) feedback
  - "You do not know how to give feedback"
- Don't get defensive and argumentative
  - "You are wrong"
  - "You did not understand it"
- Don't try to figure it out on the spot, take time

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Be grateful!

Give Credit, Always

Err on the side of giving others more credit, than less credit

Ignoring it, likely the easiest way to make people resentful

It's easy to think your contributions are more valuable than of others

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Problem Selection

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Types of Contributions

- A more efficient solution to a known problem
- An interesting solution to a known problem
- Introduces a new problem
  - the solution matters less
- Makes the community contributions more accessible
- Clarifies the trade-offs and gaps of existing approaches
  - includes negative results, meta-analyses, etc.

Some of My Rationales

- Impact more important than being faithful to a topic
  - I decided the topic of my thesis with 3 months before defense
- Do what others don't want to do
- Optimize for relevance within the application domain
- Focus on what can be done, not on what cannot be done
- Illuminating a problem as important as solving a problem

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Impact Can Have Many Flavours.

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How Impact Can Look Like?

- Scientific impact/make a breakthrough
- Popularize a methodological approach
- Enable others to do more/better work
  - release data, tools, surveys, etc.
- Great teaching material
- Policy impact/news coverage

What Is Useful For Those Outside DM

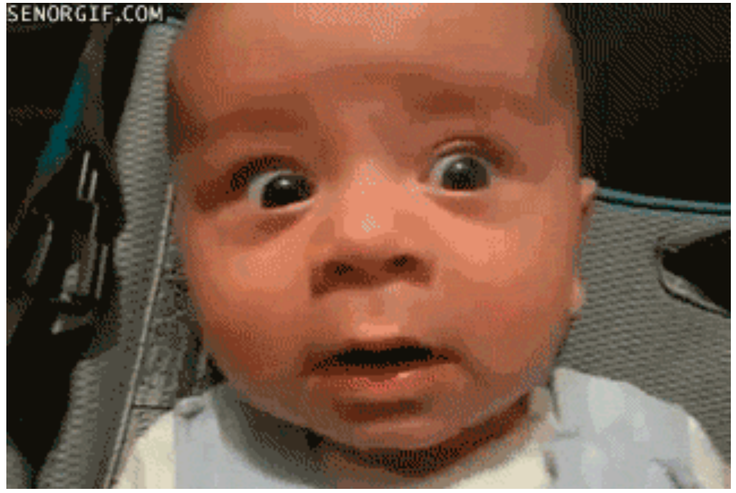
- Do not just release code, tell me when it is (not) useful
  - e.g., textual data vs. images, good for imbalanced/small data
- Give the high-level intuition of your work/solution
  - if it proves to be what I need, I'll check the details
- Go beyond abstract evaluation metrics
  - translate x% improvement in precision in measurable benefits within some application domains

Finally, a Few Ph.D. Phases

Phase 0: The Before Excitement

Phase 1: The 1st Year Confusion

Phase 1: The 1st Year Confusion



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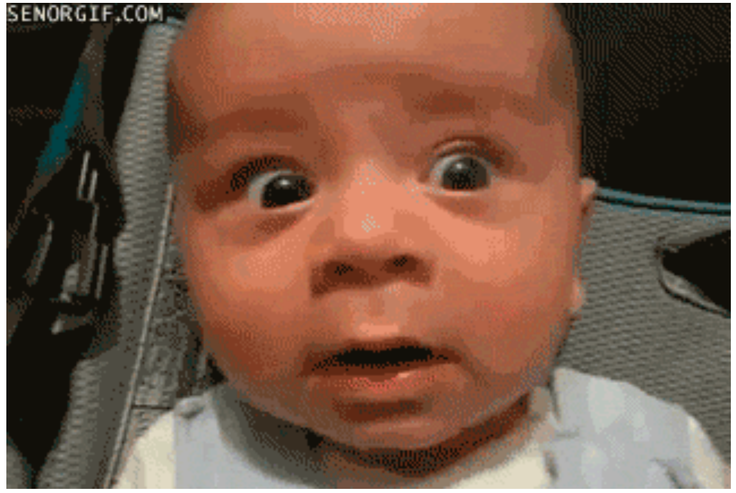


But, eventually,
you'll figure it out.

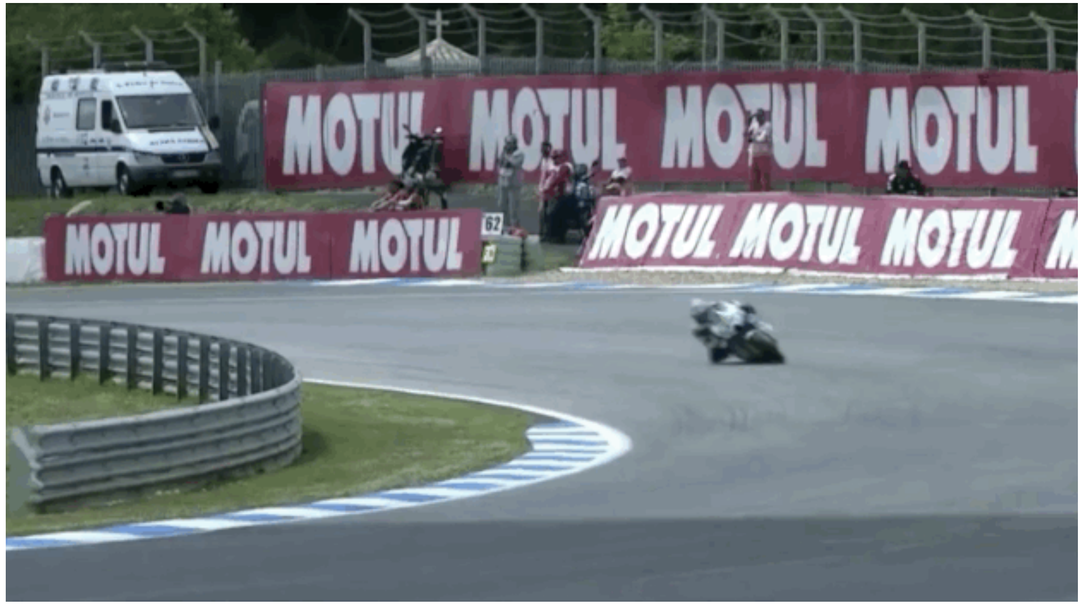
Phase 2: Mid-PhD Crisis

What you say…

and, how you feel…

Phase 3: The Serendipity

Often,
the ride is bumpy



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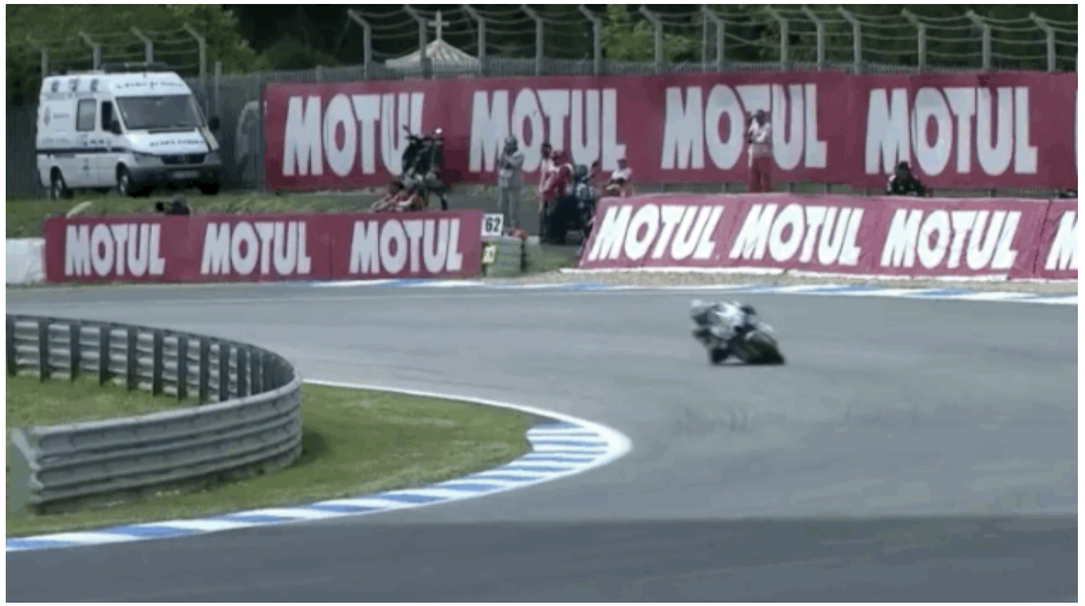

Sometimes,
you'll feel lucky

Phase 4: Overwhelmed

Sometimes, it feels like
a lot to handle

Phase 4: Overwhelmed

Sometimes, it feels like a lot to handle

But, you'll pull it through

Last Phase: What Is the Next Step?

KEEP CALM AND QUESTION EVERYTHING

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@o_saja

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AND
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