Lessons learned along the path of an early career researcher

Raphaël Monat

rmonat.fr/emw24/

ETAPS Mentoring Workshop 7 April 2024



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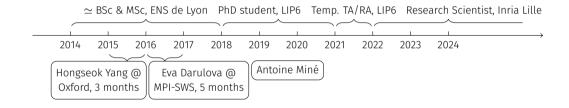
2 years as faculty

Raphaël Monat rmonat.fr/emw24/

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Whoami



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- ➤ Software-Verification Competition → Monday afternoon

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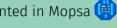
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Threats to validity

Laura Kovács, EATCS Bulletin

"There are many advices one gets and one should filter out among these advices. Actually, it is impossible to follow all advices."

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"There are many advices one gets and one should filter out among these advices. Actually, it is impossible to follow all advices."

Laurence Tratt, and his alternative sources of advice

"I've been given a lot of advice over the years, but I think that which I've derived from history has had the greatest influence on me."

Focus on academic careers.

Plenty of opportunities

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▶ Private sector from startups to big tech

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Various positions researcher, teacher, software engineer, project manager, ...

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Switching to other fields is possible too!

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➤ You are not expected to have figured out everything. We are all learning, e.g. from advisors, senior collaborators, ...

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- ▶ Feel free to ask questions during the talk!

Outline

- 1 Ways of doing research
- 2 Diversity in CS & academia
- 3 Taking care of your health
- 4 Low moments
- 5 Carbon footprint of our research
- 6 Faculty applications

Ways of doing research

We all have different theory-practice preferences

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In my case: software is both a target and a product of my research

+ Motivating me

We all have different theory-practice preferences

- + Motivating me
- + You can run what you built

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- Long-term applicability

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▶ Allowing replication of scientific results by third parties

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Merigoux, Monat, and Protzenko. "A modern compiler for the French tax code". CC 2021 Merigoux, Chataing, and Protzenko. "Catala: a programming language for the law". ICFP 2021

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Now I try to:

Keep myself open to collaborations

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 Doesn't entail industrialization

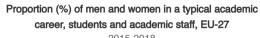
Diversity in CS & academia

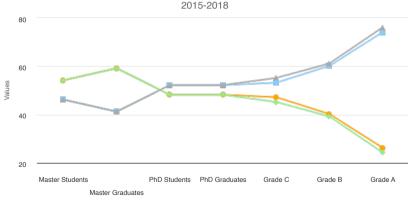
Diversity issues in CS academia

Focus on gender-imbalance, not the only diversity issue that needs addressing

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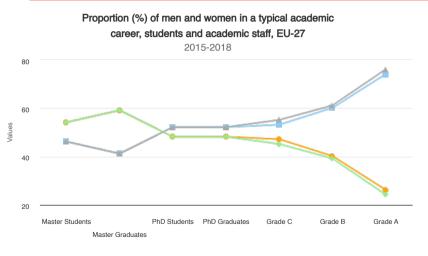
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Diversity issues in CS academia

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Women at Inria: PhD/post-doc: 23%, Research scientist 19%, Research director 17%

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Diversity and inclusion session on Monday afternoon

Incorrect behaviors in academia

IPSOS 2023 poll

"One in two women scientists [...] experienced [...] sexual harassment"

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Peter Roenne

Some stress factors I experienced during my PhD

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Managing Your Mental Health During Your PhD

MENTAL HEALTH DURING YOUR PHD THE TOXIC MIX

A study by the University of California, Berkeley, found nearly half of postgraduate students met criteria to classify them as depressed. This poster explores the common stressors that PhD students may be exposed to during their PhD.



minority groups, feelings of not 'deserving' to be on your PhD despite having earned it are rife.



Students undertaking a PhD have often never experienced failure, having done well in previous studies.



Maintaining a work/life balance can be difficult with the academic culture of overwork.

TIIGH REI ATIONSHIPS

Supervisor/student relationships be it an absent supervisor, or overbearing, can be particularly tough to manage.

NO MORE TICK BOXES

Transitioning from taught courses to research can be difficult, particularly given the open-ended nature of research.

SELF-HARMING?

CALL SAMARITANS NOW ON 116-173

SUICIDAL THOUGHTS?

Reference: 1, Graduate Student Happiness & Well-Being Report, 2014, University of California, Berkeley,

FINANCIAL CONCERNS

Money worries can lead to increased stress. Waiting long time periods to receive for example, conference reimbursement can exacerbate the issue.

COMPETITIVE LANDSCAPE

Competition not collaboration is often fostered. Given no two PhDs are the same comparing your PhD to someone else's can be deflating.

Focus on research output

ISOLATION/GUILT

Writing a thesis can be isolating. This can also be coupled with feelings of quilt when taking breaks.

CULTURE OF ACCEPTANCE

In academia, there is a culture of acceptance that mental health issues are part of the journey. This needs to change.

Part of the #mentalhealth series by Dr Zoe Avres (@ziavres). Free to distribute.



can lead to feelings of not being 'good enough' if you do not have n publications Taking care of your health

A focus on work-life balance

A paradox about work time in academia

High freedom

Heavy workload

ACADEMIA





WWW.PHDCOMICS.COM

Causes

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My opinion

- ▶ There are long term health consequences to overwork
- ▶ There can be peak, but the goal is to even them out in the long term
- ▶ In my opinion, there is a life outside work. May avoid burning out

Motivation

▶ PhD, no way to declare/track my holidays

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Labour Laws in France

- ► Theory: 1607h/year for civil servants
- ▶ My employer: 38.5h/week for 43 weeks, 40 days off

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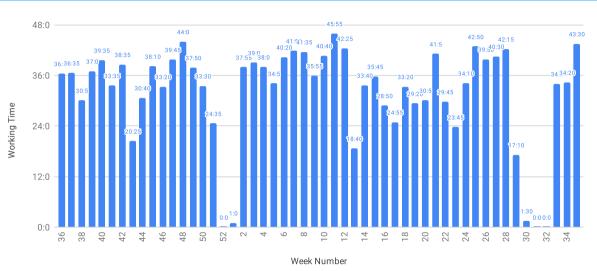
In practice: a spreadsheet with working hours.

No finer-grain tracking for each task.

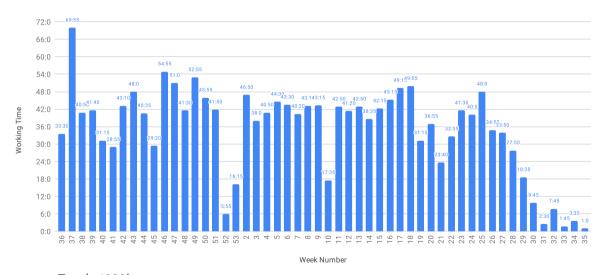


A presenteism

2018-2019, first PhD year

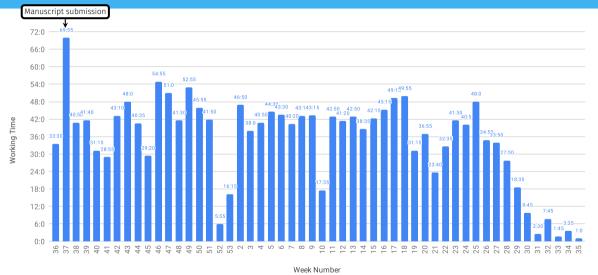


Total: 1657h



Total: 1832h

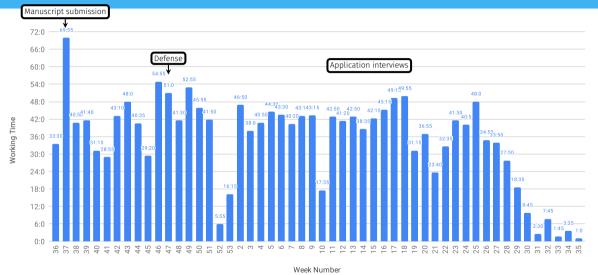
20



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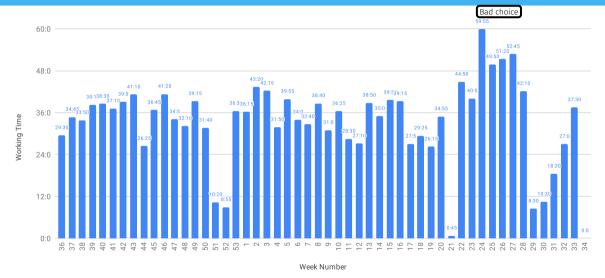


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2022-2023, First year on a permanent position



Total: 1735h (incl. additional teaching hours €)

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75% weekends are work free

25% are mostly train trips where I "pass time"

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<u>For me,</u> having real weekend breaks is important.

Plenty additional tasks

Teaching, student advising, paper/PC reviews, funding & job reviews

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Guiding questions

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Outcome

Decline

- ► Addressing fear of missing out, or retaliation
- ▶ It's much better than being late and rushing work

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- ► How interested am I?
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- ▶ It's much better than being late and rushing work

Negotiate Discuss deadlines, review load,

Plenty additional tasks

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Guiding questions

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Hiding off-working-hours activity to others

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 - does not apply in rare emergencies
- ▶ What about commits & development, instant chat?

We all have periods of struggle, of low motivation, ...

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Some suggestions

► Talking about it

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- ► Identifying and addressing influencing factors
- Having hobbies outside of work will help

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A focus on paper rejections

Peer-review is a cornerstone of the current academic approach

Goals: <u>constructive</u> criticism, exchange of ideas

A lot of submissions are rejected

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- ► Less painful with multiple ongoing projects

List of failures

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Funding

► Amazon funding → work in progress

but Research Scientist at Inria

Carbon footprint of our research

Now and then

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Getting data before making decisions

▶ CO2eq generated from personal life: you can compute your carbon footprint

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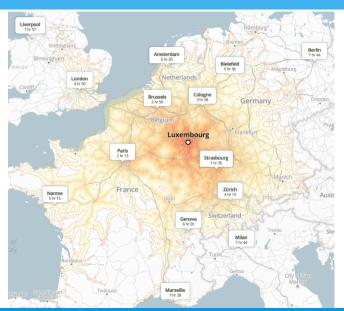
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Also consider the pledge for sustainable research in theoretical computer science

About travel in Europe



chronotrains.com
seat61.com

Faculty applications

General advice

At any stage

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During applications

► Find people with helpful feedback

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- ► Find successful applications to have models

All* faculty positions in France are permanent! No tenure-track.

Two kind of permanent jobs

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Research scientist

- No teaching duties
- ► 16 positions in total at CNRS
- $ightharpoonup \simeq$ 38 positions in total at Inria

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- ▶ show that you can work on different topics, with different people

The process

Jan/Feb Written application submission

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Apr/May	Interview → preliminary ranking
Jun/Jul	Decisions and notice

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Some implicit constraints

For researcher positions: get in touch with teams before applications open

- \blacktriangleright e.g, October or November of Y for jobs starting in Fall of Y + 1
- ▶ in my experience, teams are happy and helpful with their candidates

Details, see experience of a3nm.net/work/applications/

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- ► Geographical location & personal choices

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 - Institution & funding
 - Discussing/Negotiating

Lessons learned along the path of an early career researcher

Discussion

Raphaël Monat rmonat.fr/emw24/

ETAPS Mentoring Workshop 7 April 2024

