

# Research in Academia

*Yiying Zhang*



**UCSD CSE**  
Computer Science and Engineering

*@WukLab*





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AKA Midlife Crisis of *Yiying Zhang* and How She Deals with It



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The Secret to Success











# About Me





# About Me





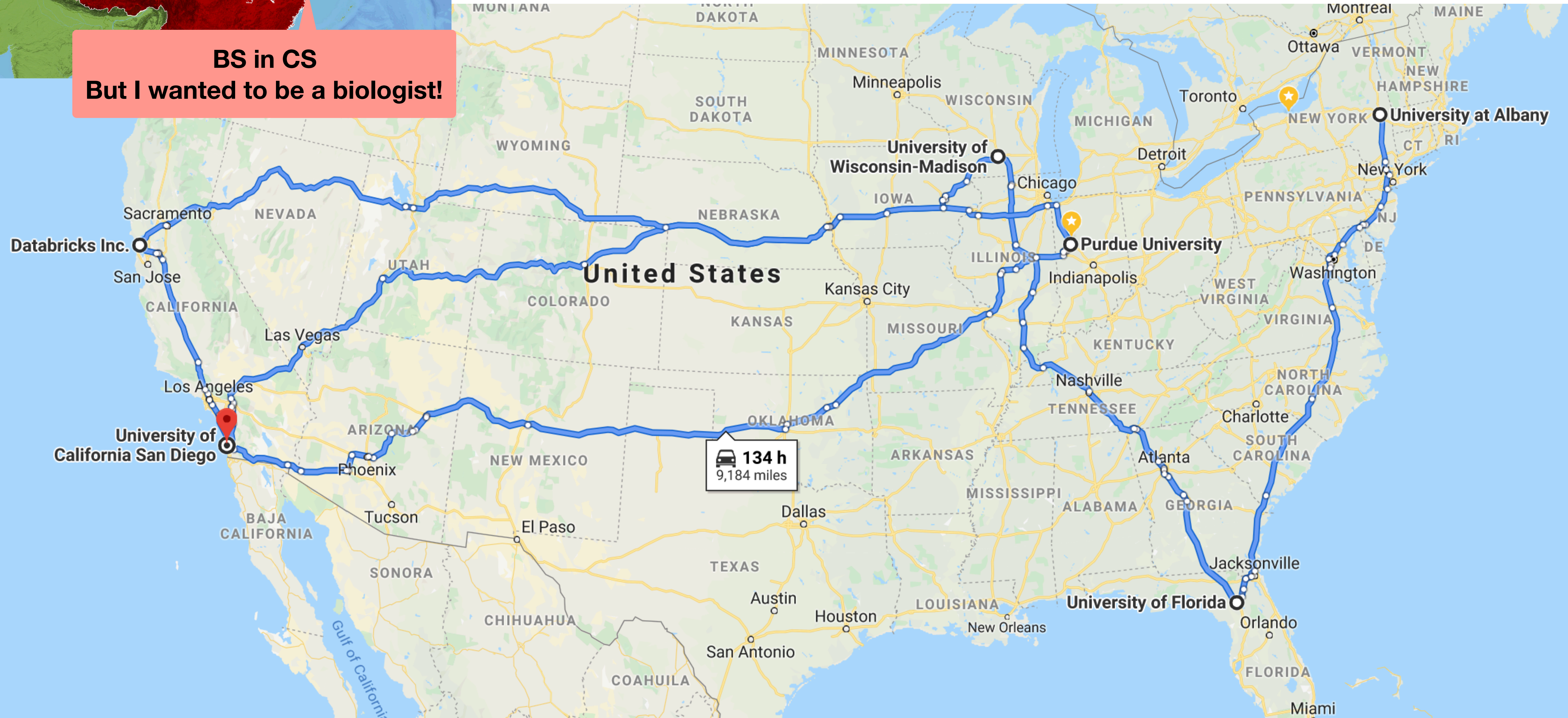
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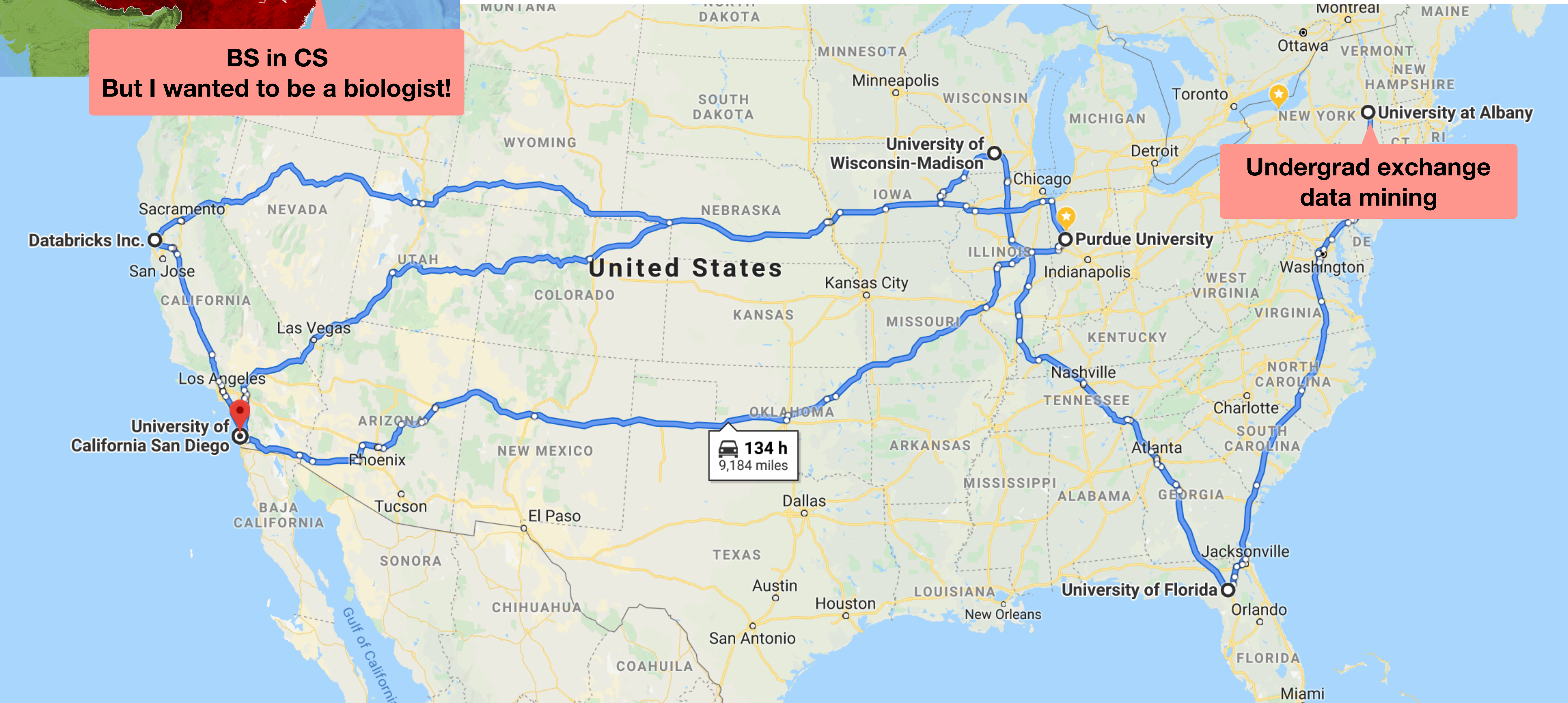




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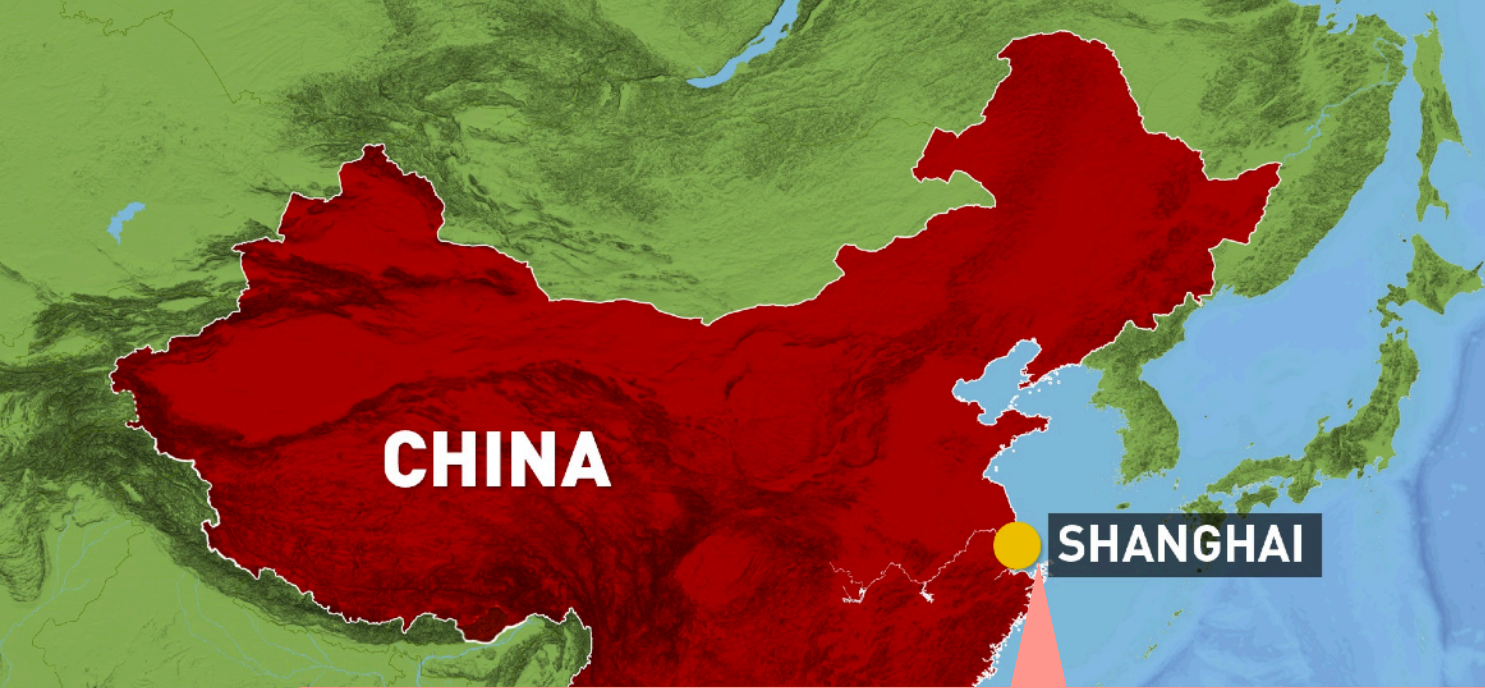
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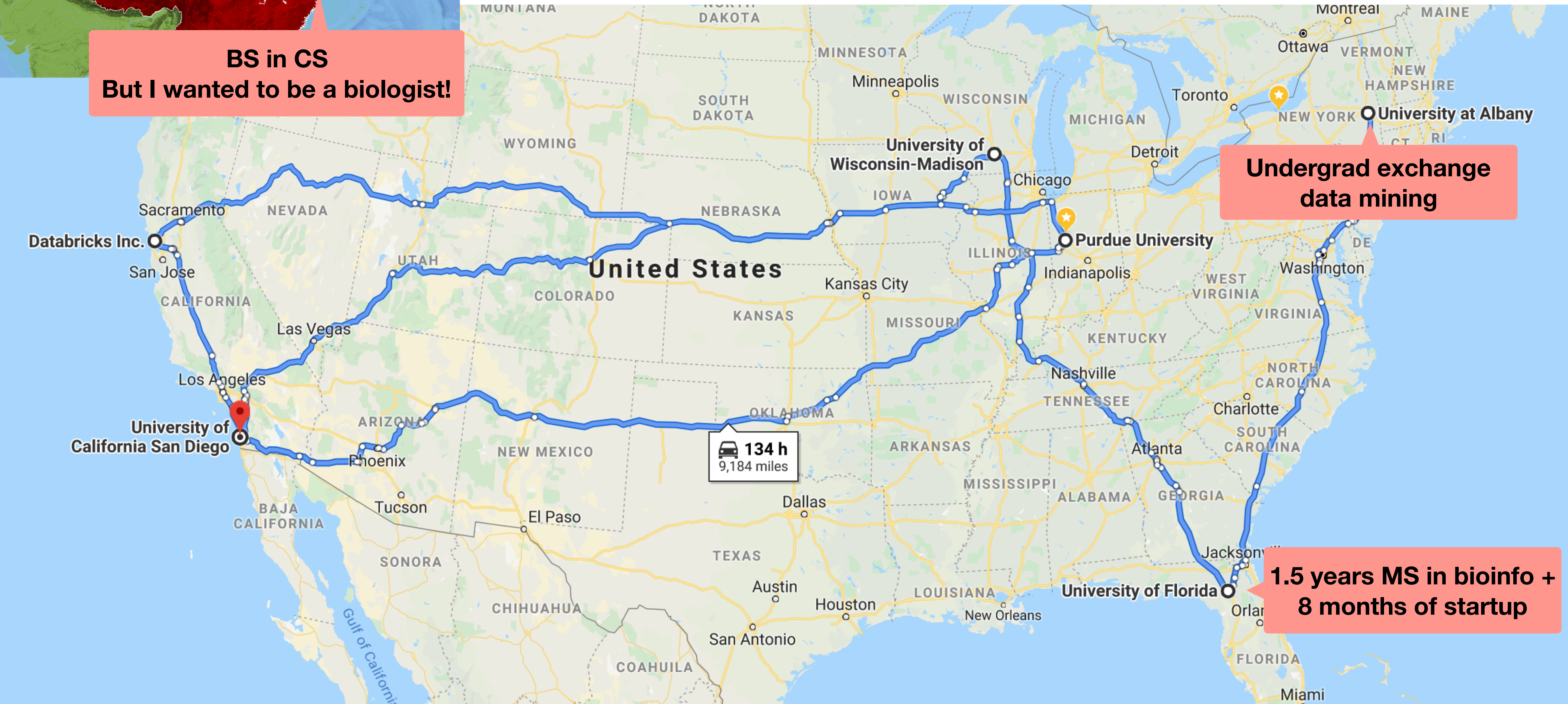
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**data mining**



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**1.5 years MS in bioinfo +**  
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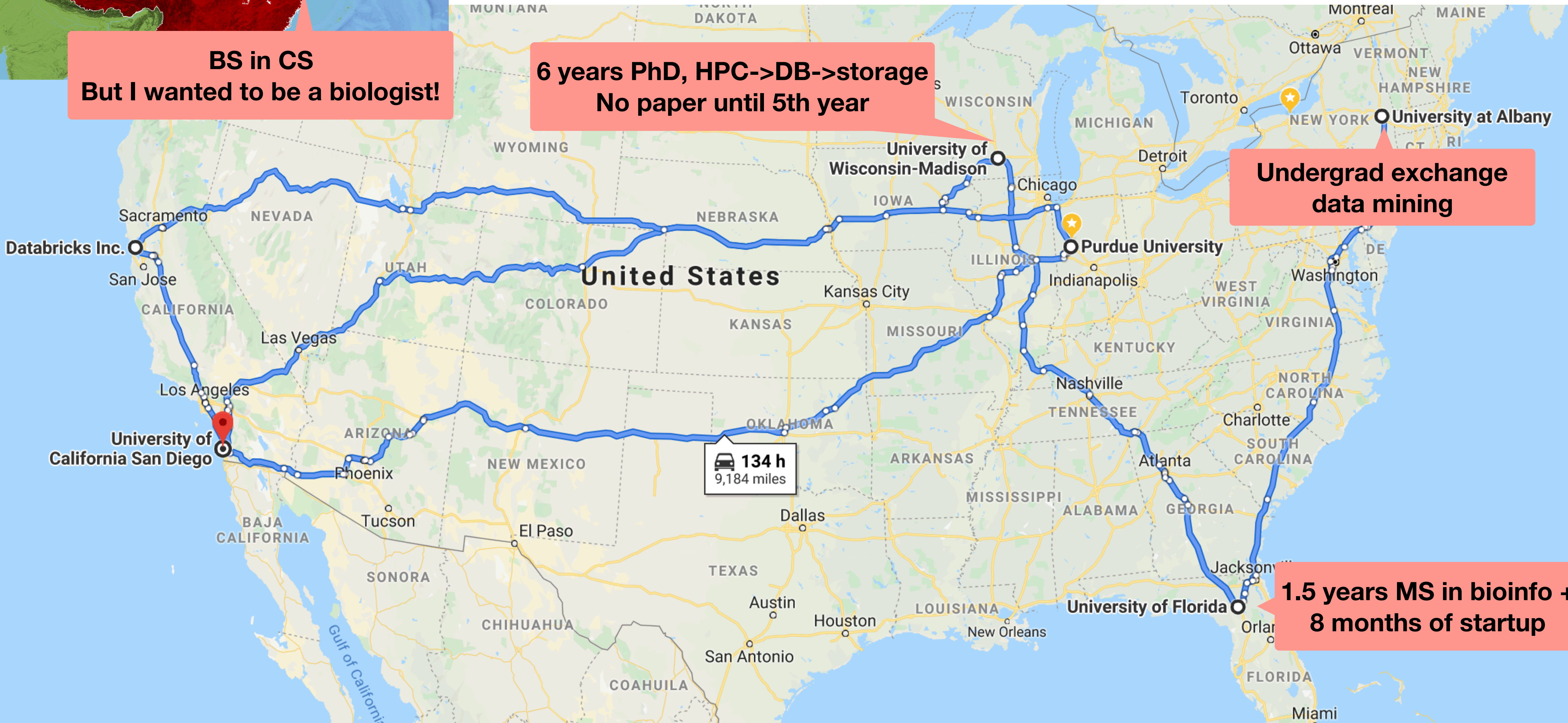


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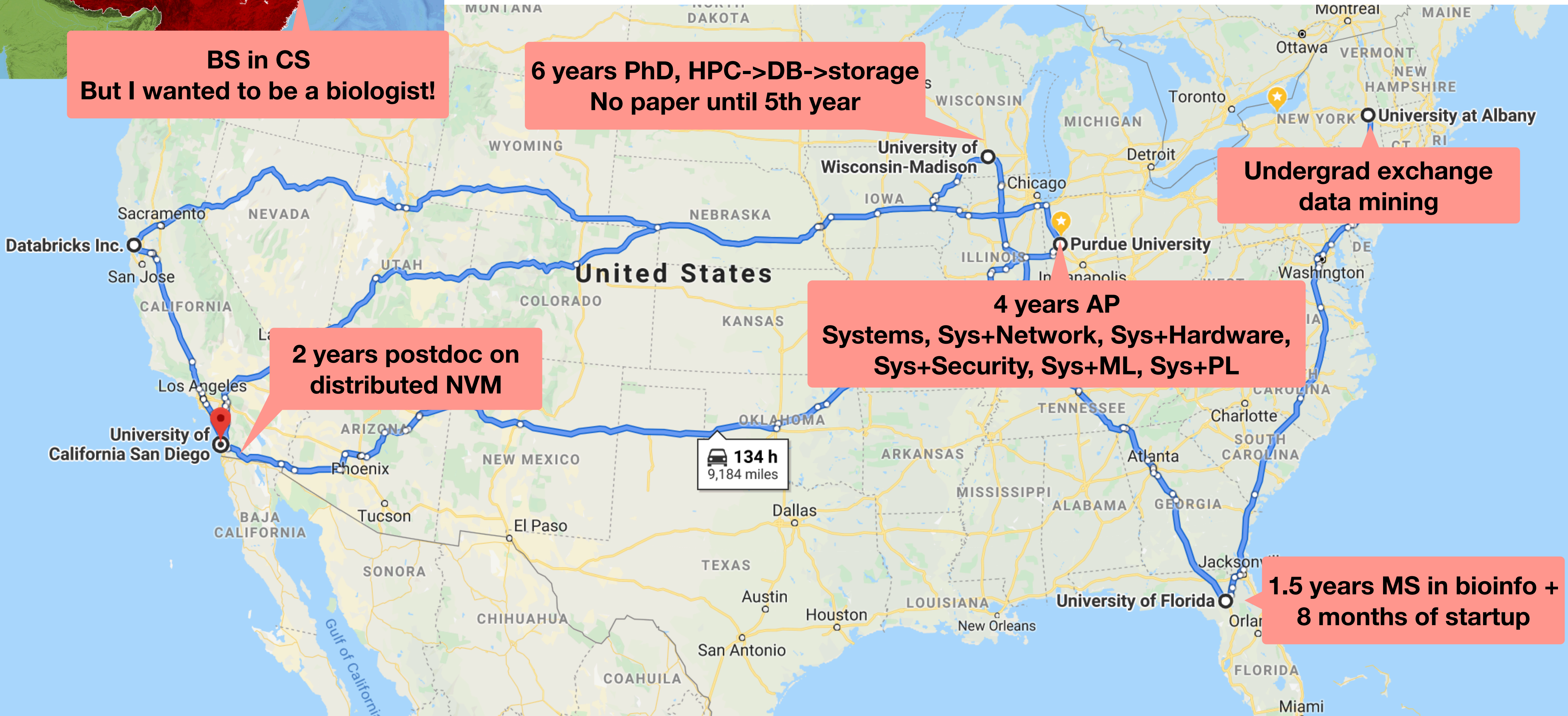
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**134 h**  
9,184 miles



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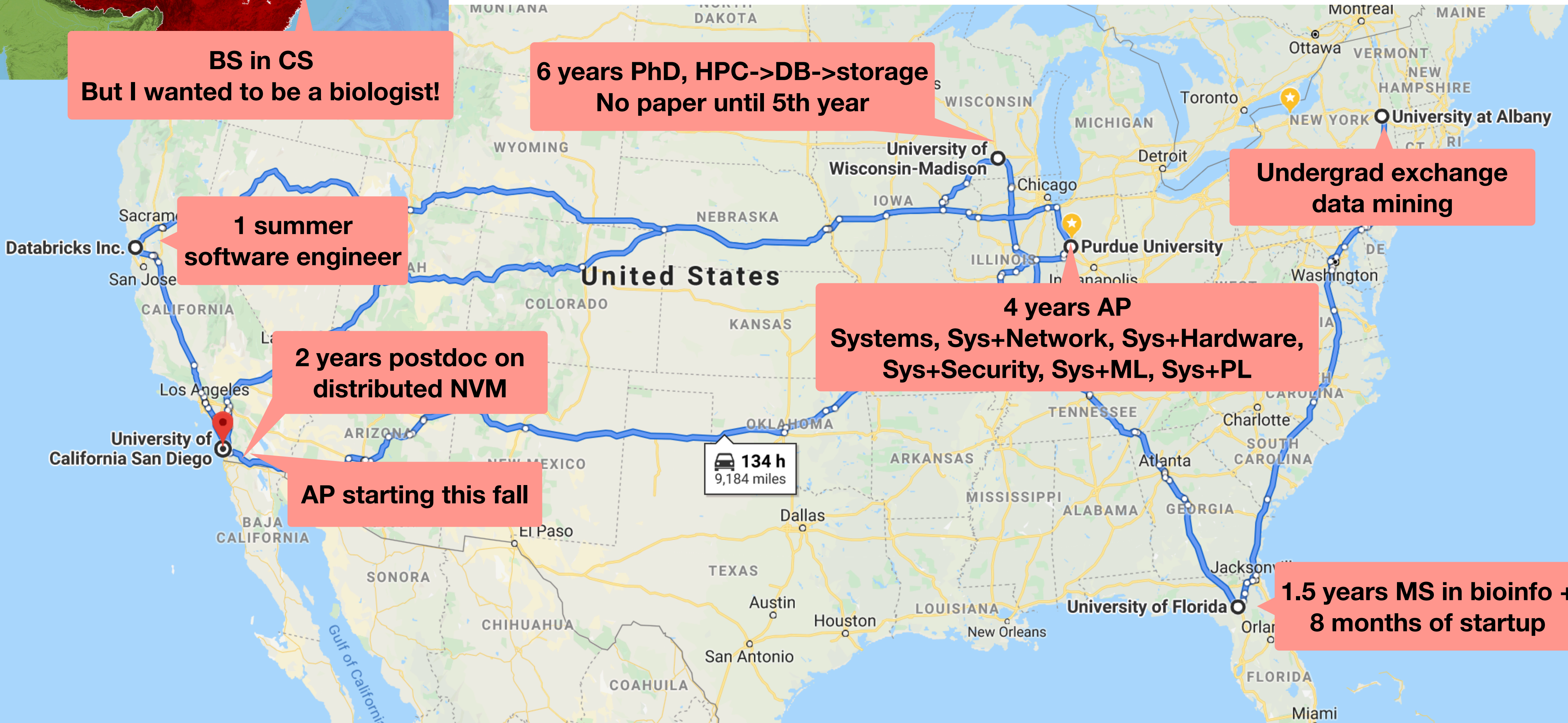
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# Disclaimer

- Only my personal opinion, take it with a grain of salt
- I don't have all the answers and have many questions myself
- Wisdom from mentors, friends, students, and many others
  - So You Want to Be a Research Scientist by Vincent Vanhoucke
  - Stress in Research by Charles Sutton



**What is Research in Academia Like?**



# Research in Academia: Best job in the world?

- You can work on anything you want
- at any time you want
- No boss
- Be creative and follow your curiosity
- Help young people gain knowledge
- Work with brilliant people
- Make some impact

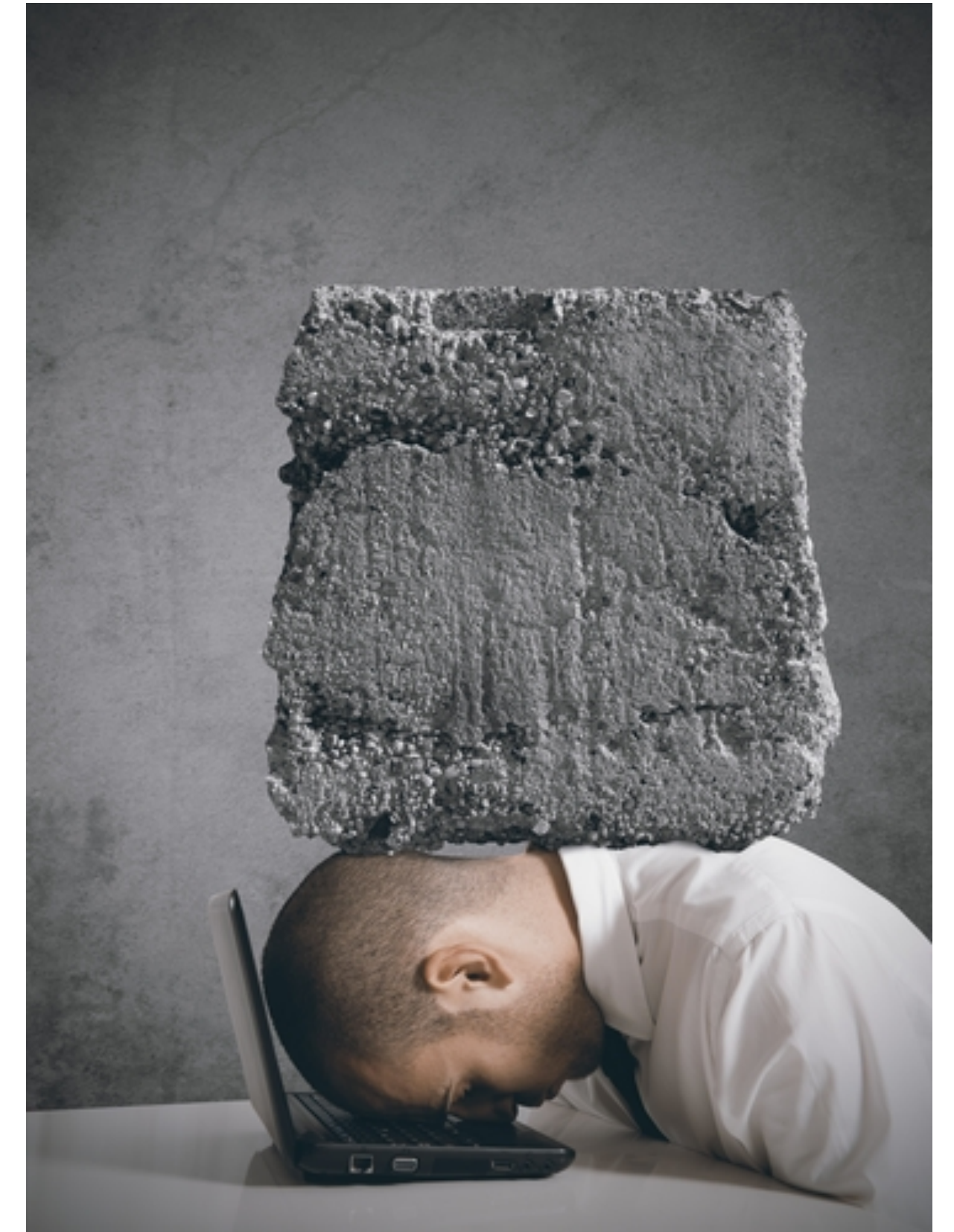


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- ~ **37%** of academics have common mental health disorders
- > **40%** of grad students report stress-related problems

<https://www.timeshighereducation.com/news/academics-face-higher-mental-health-risk-than-other-professions>



# ACADEMIA

PRO

YOU CAN WORK WHENEVER  
YOU WANT! EVERY DAY  
IS A SATURDAY!



JORGE CHAM © 2017

CON

YOU WORK ON SATURDAYS.



[WWW.PHDCOMICS.COM](http://WWW.PHDCOMICS.COM)



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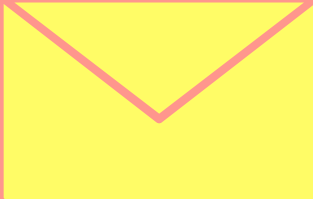
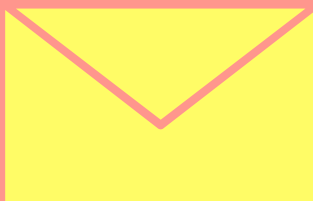
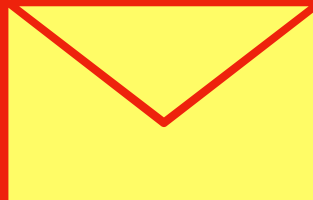



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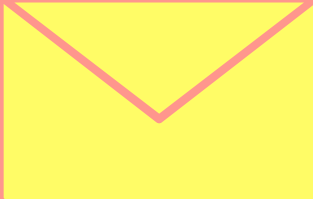
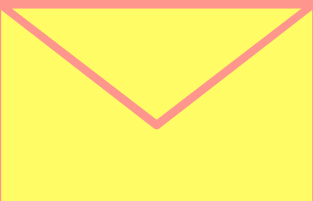
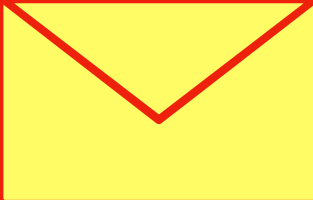
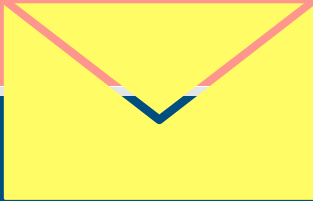



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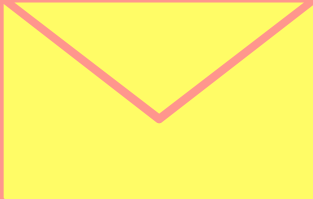
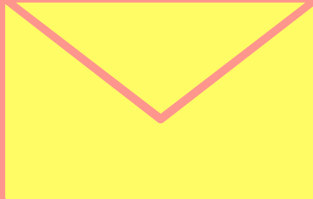
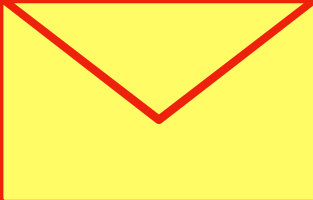
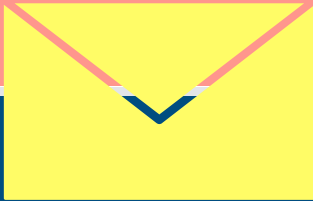




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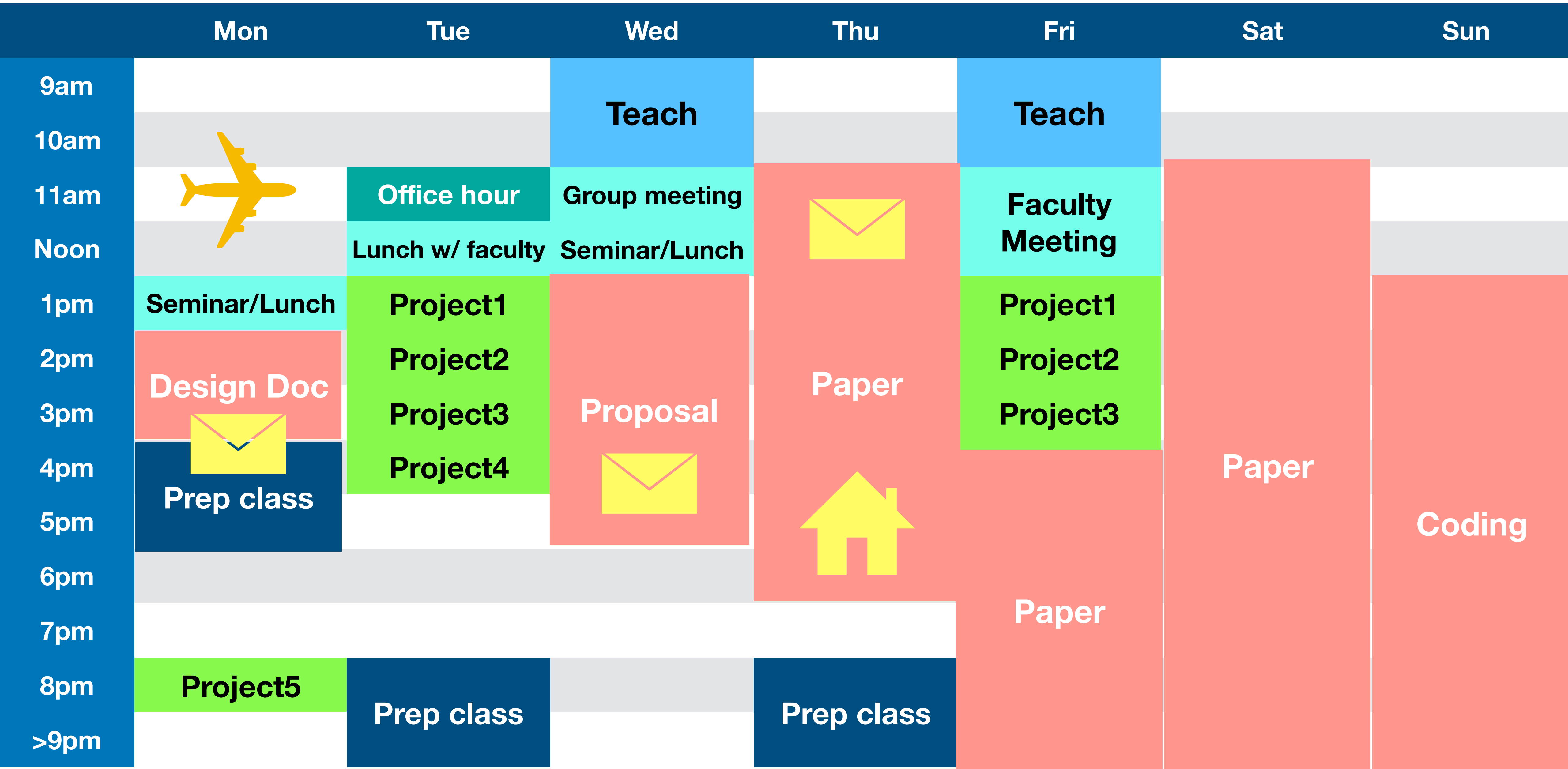


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# What my days look like?







- CTO
- CFO
- Manager
- Program manager
- Tech lead
- Software engineer
- HR
- Sales
- Teaching + Service



**With infinite freedom comes infinite responsibility**



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**Good news: You *are* in control**

**Bad news: *You* are in control**



# Opportunity and Stress: Flexibility to Choose



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- Choosing A => Sacrificing B
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- Learn to say NO; do multiple long-term plans





**Most things “don’t work”**



# Most things “don’t work”

- Negative results
- No immediate impact
  - No one cites you
  - No industry adoption
- Work that becomes obsolete the minute you publish it



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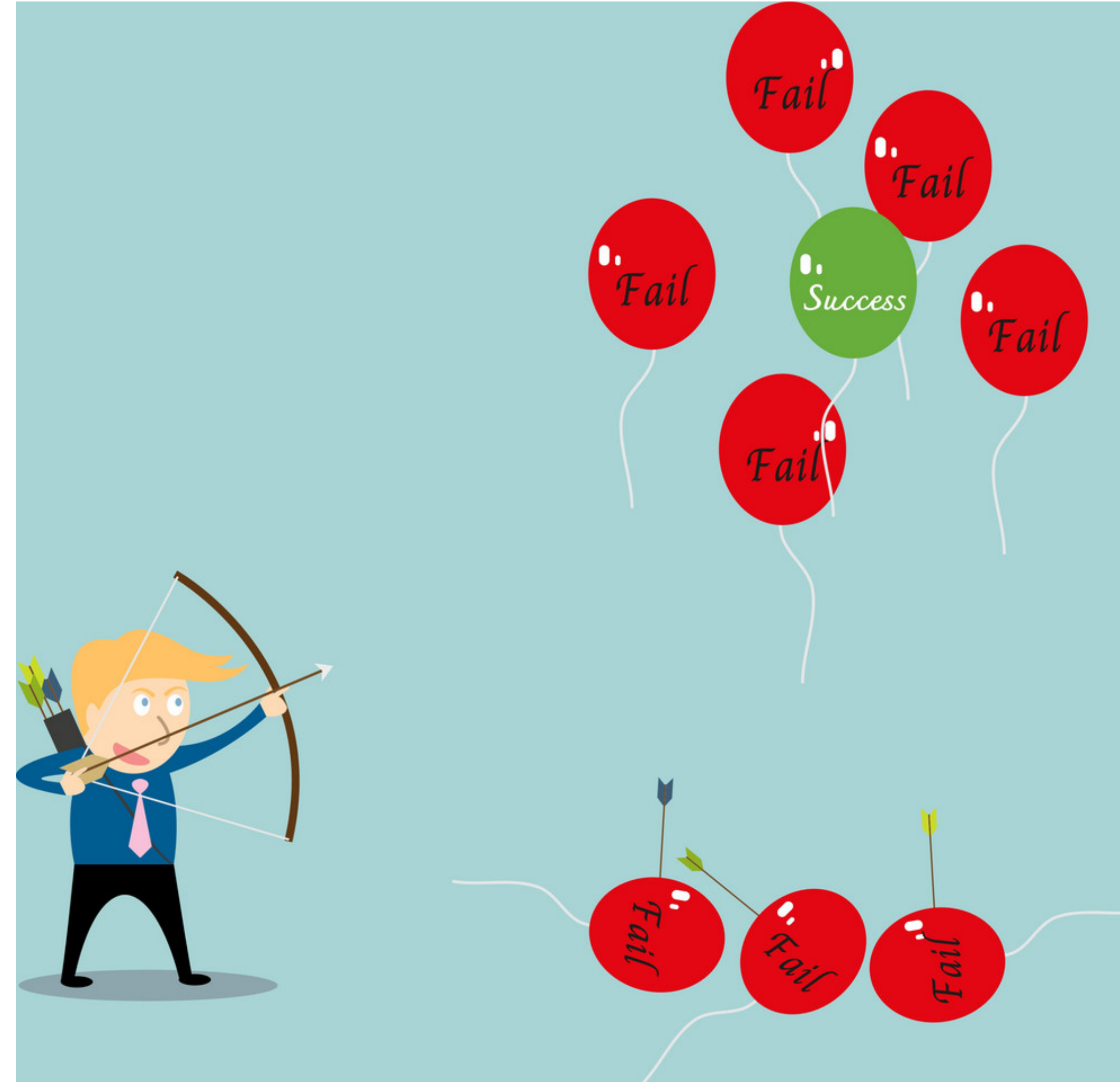
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- No immediate impact
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- Work that becomes obsolete the minute you publish it
- Once in a while, you may hit something truly great (or not)





# Students are (Largely) Your Responsibility



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- They (sometimes even their parents) count on you
  - to make the right **decisions**
  - to protect them from **risks**
  - to pay them, to get papers in, to graduate them, to help them find a job



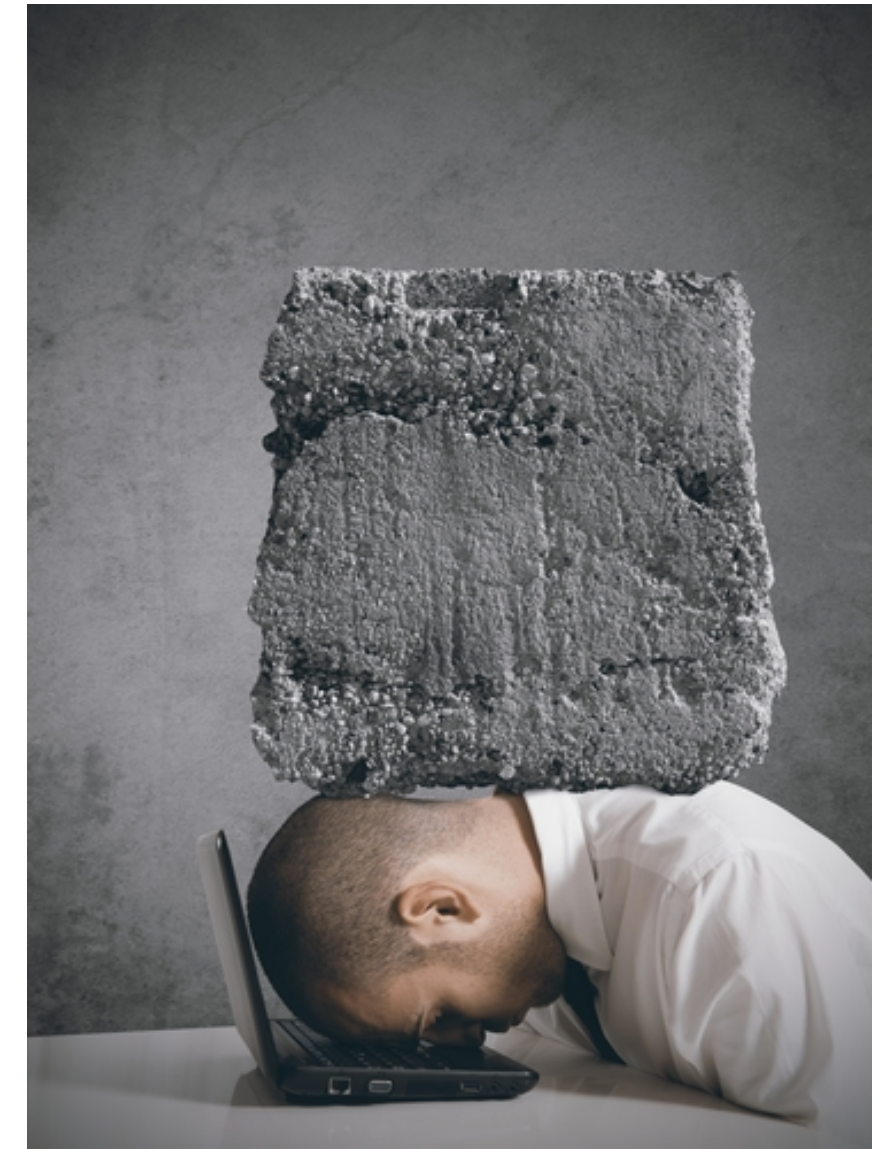
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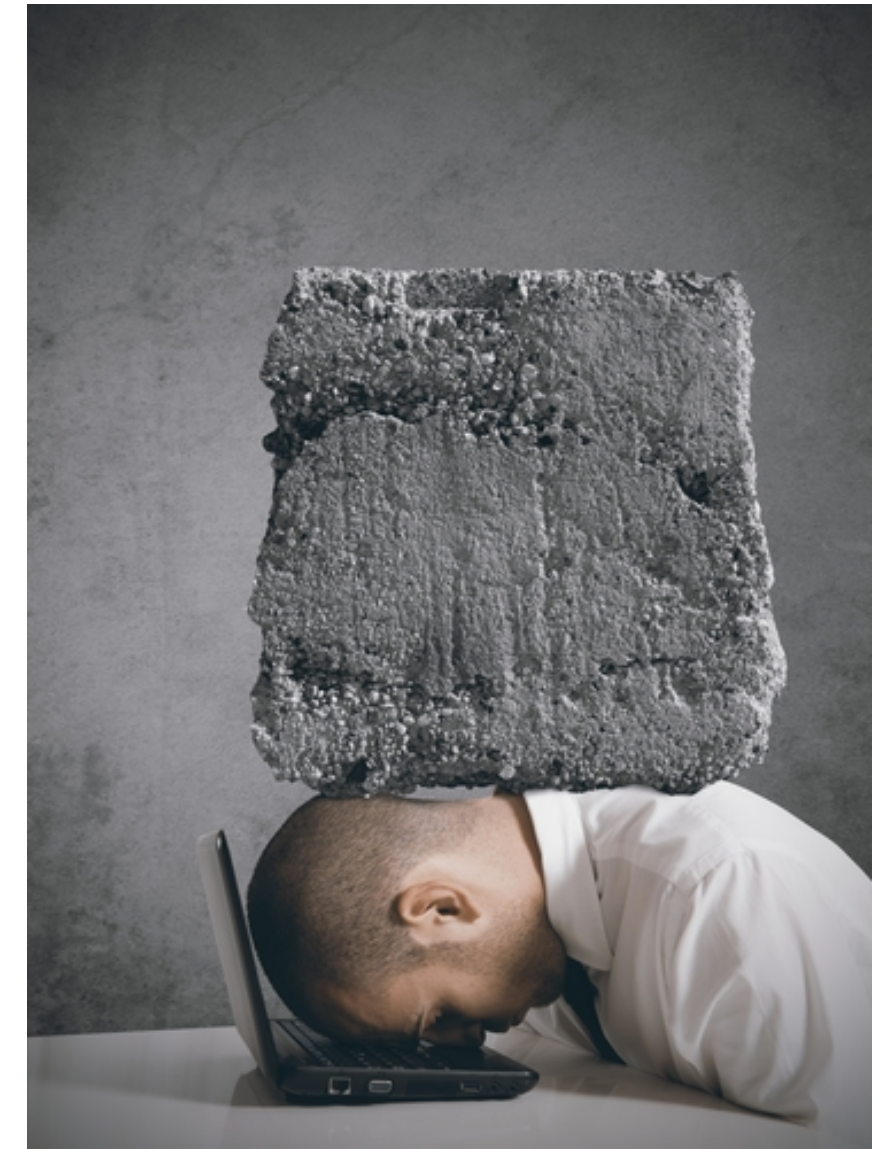
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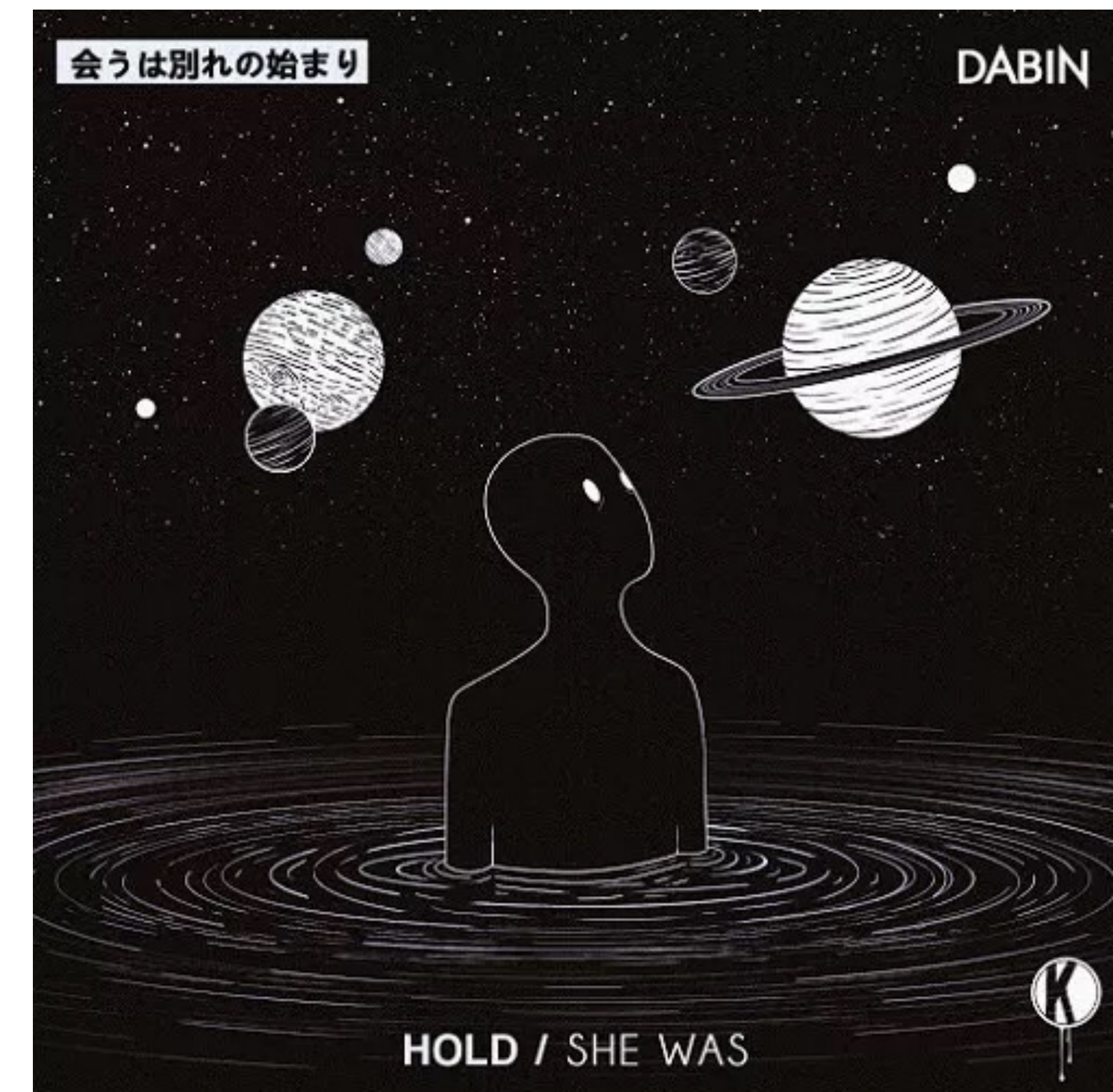


*Students are also sources of joy and rewards!*



# Learning, not (just) teaching

- Need/want to learn constantly
- Measure progress in units of learning not units of solving
- Soft skills can also be learned
  - Social (in specific settings)
  - Management





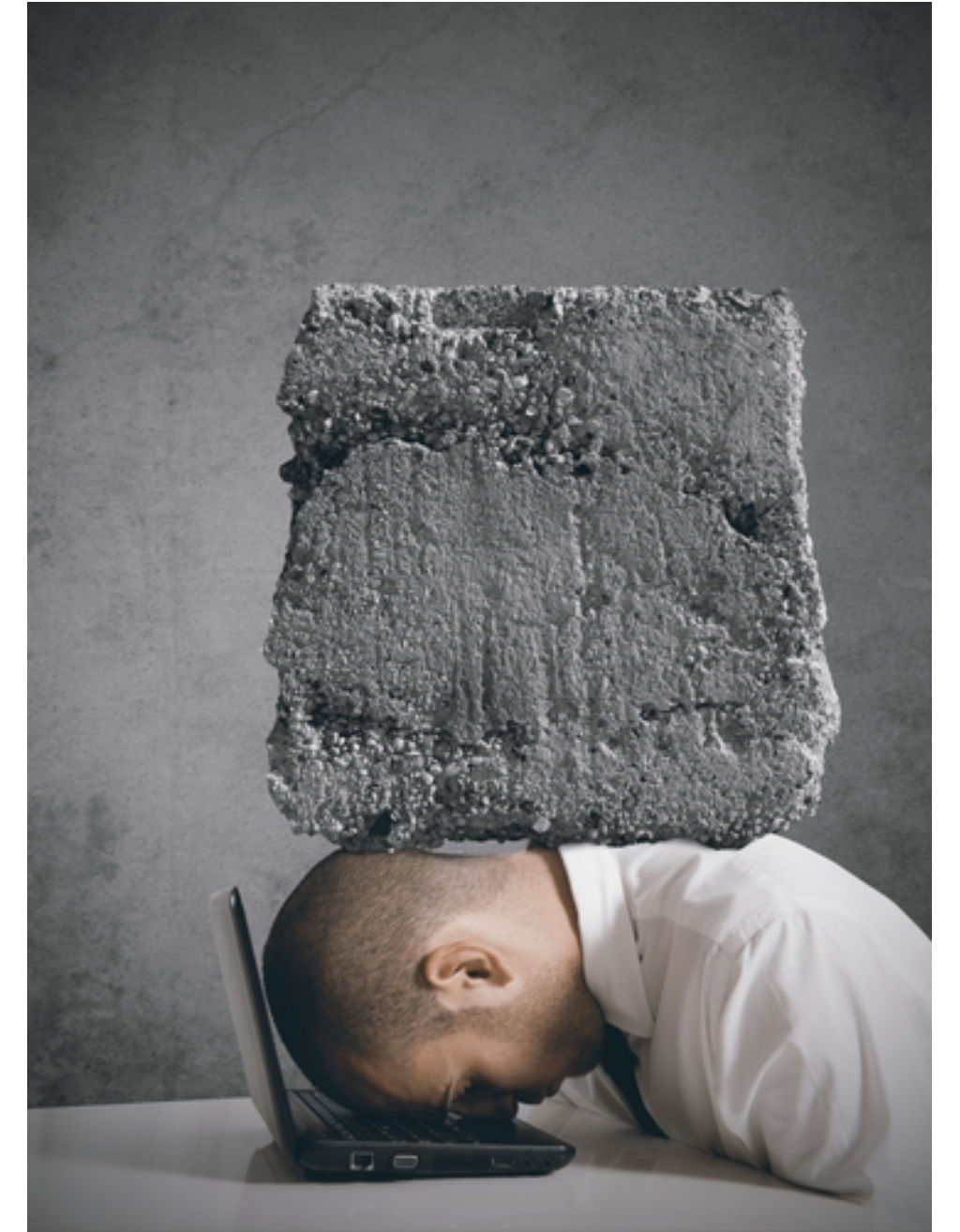
# A Long Journey

- Live long (be physical and mentally healthy)
- You need your pain
- Find fun in day-to-day work
- Have support from family
- Take breaks

NEVER  
SETTLE



# Tenure Pressure?





# Tenure Pressure?

Copyrighted Material  
A brutally Machiavellian  
guidebook for the current or  
aspiring assistant professor

## Tenure Hacks



The 12 Secrets of  
Making Tenure

Russell James, J.D., Ph.D.

Copyrighted Material

Front Cover



# Tenure Pressure?

- Remzi Arpaci-Dusseau:

Do good work and everything else will follow



# Tenure Pressure?

- Remzi Arpaci-Dusseau:

Do good work and everything else will follow

- Hank Levy:

No tenure -> go to industry and double your pay check



# Industry vs. Academia (Engineer vs. Researcher)



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- Industry/engineer: find all possible solutions for a (set of) specific goal(s)
- Academia/researcher: find a solution in one layer that works in many settings



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- Academia: if it doesn't work?



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*Horizontal*

- Industry: immediate real impact, real responsibility *Can't fail!*
- Academia: if it doesn't work? *It's just research :)*



**Some practices I find useful**



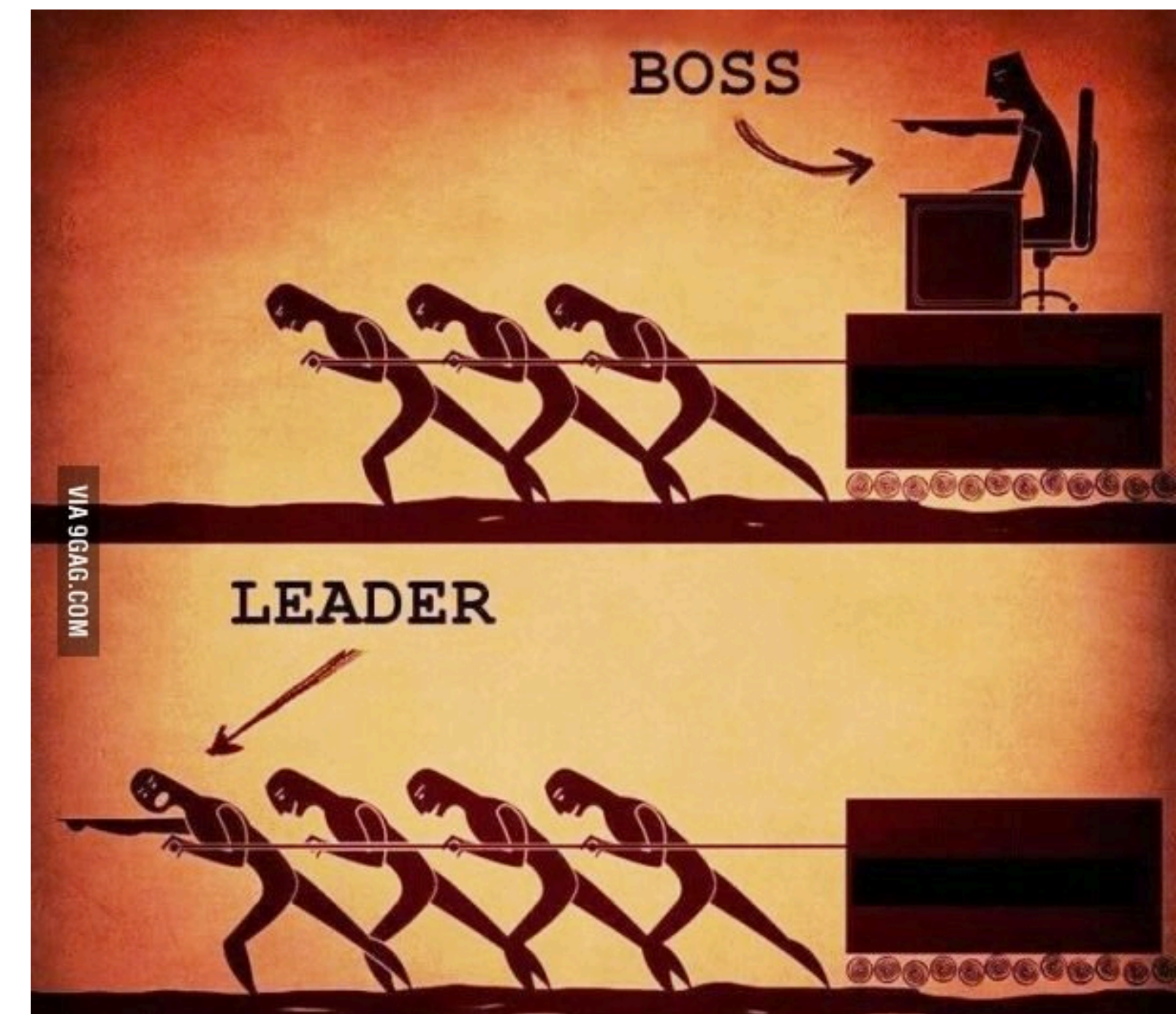
# Manage Students

- Trust your students
- Build your record for them to trust you
- Short- and long-term growth (e.g., quarterly mutual review)
- Set expectations (e.g., graduation criteria) early on
- Build a team and a culture
- Be nice, listen, be a leader



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# Find Research Topics



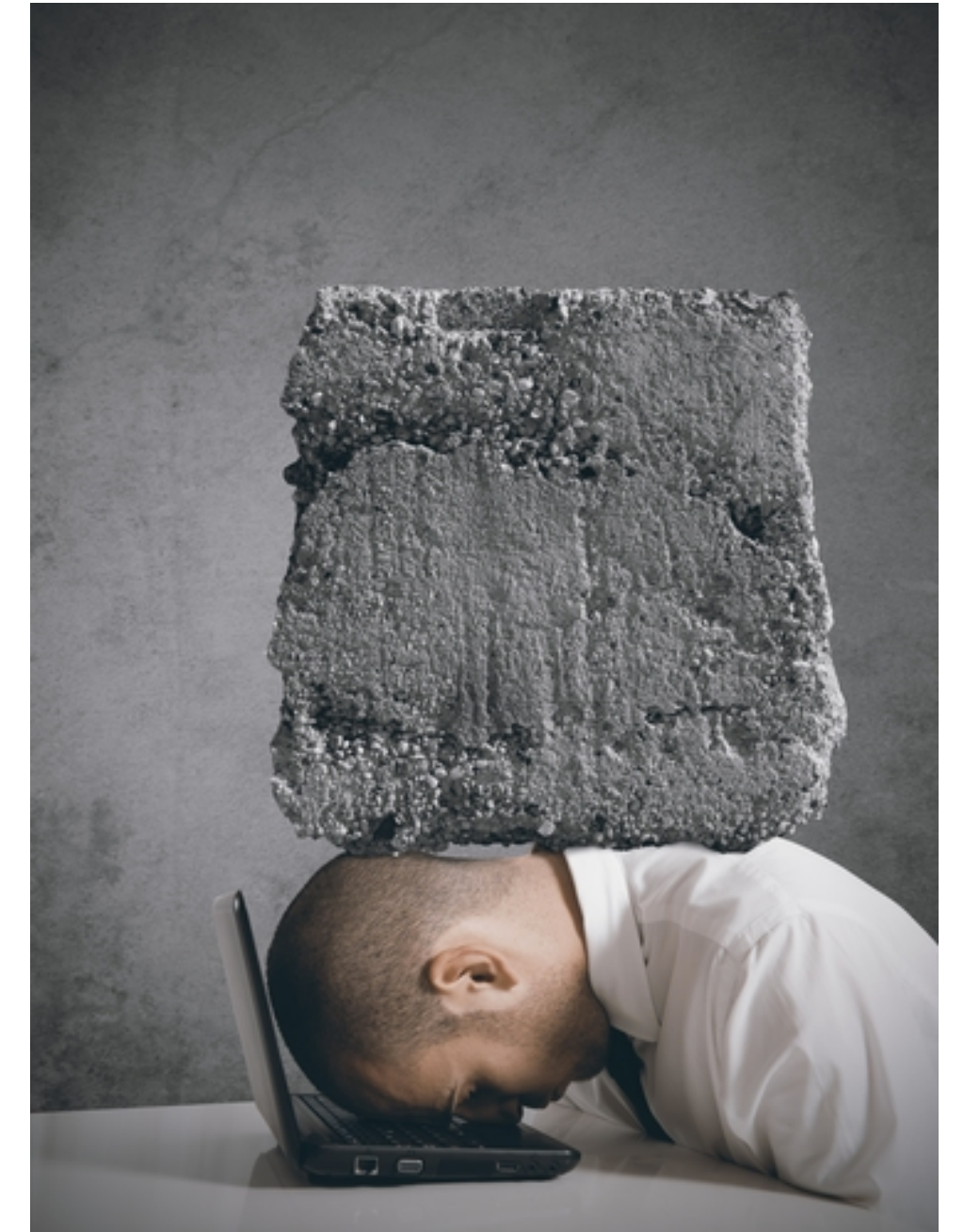
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  - Big is good? And what is big?
  - Hot area?
  - Is interesting good enough?
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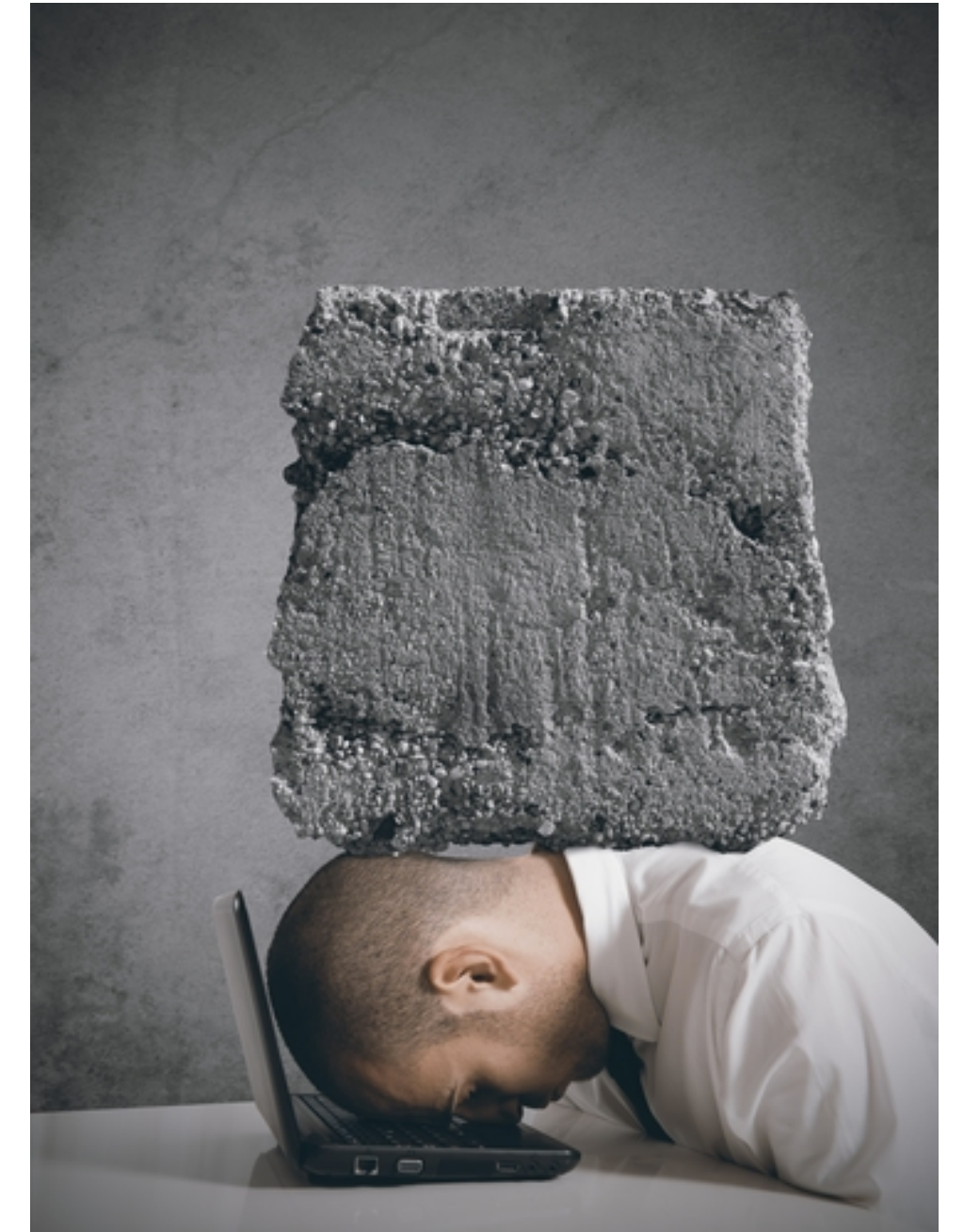
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# Find Research Topics

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  - Big is good? And what is big?
  - Hot area?
  - Is interesting good enough?
  - Practical? Theoretical? Futuristic? Riskier?
- Talk to industry and find/discover real problems
- Make longer plans, be flexible/versatile but don't go too broad (have a theme)
- Find your taste in research (not your advisor's)

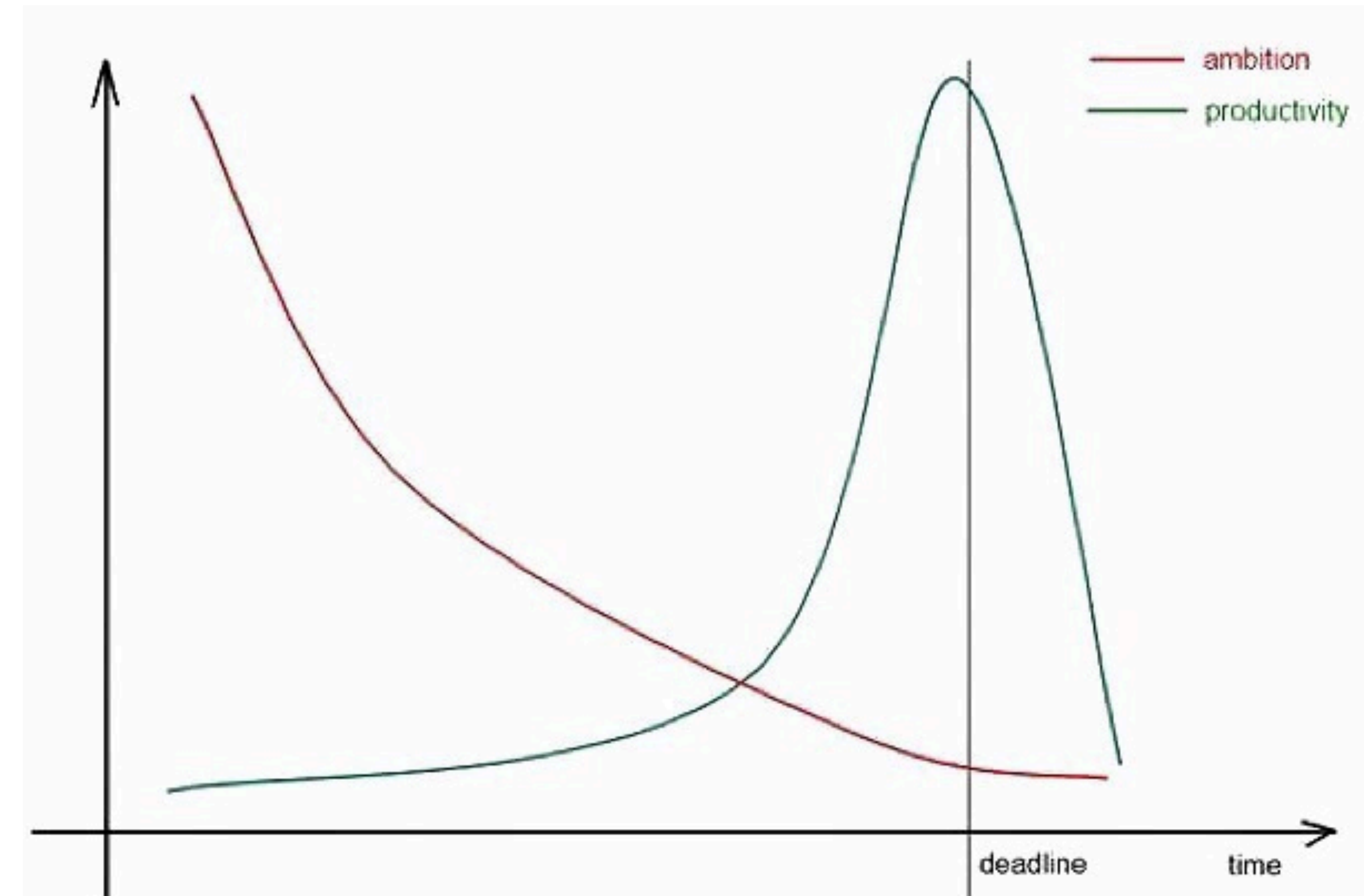




# Manage Projects



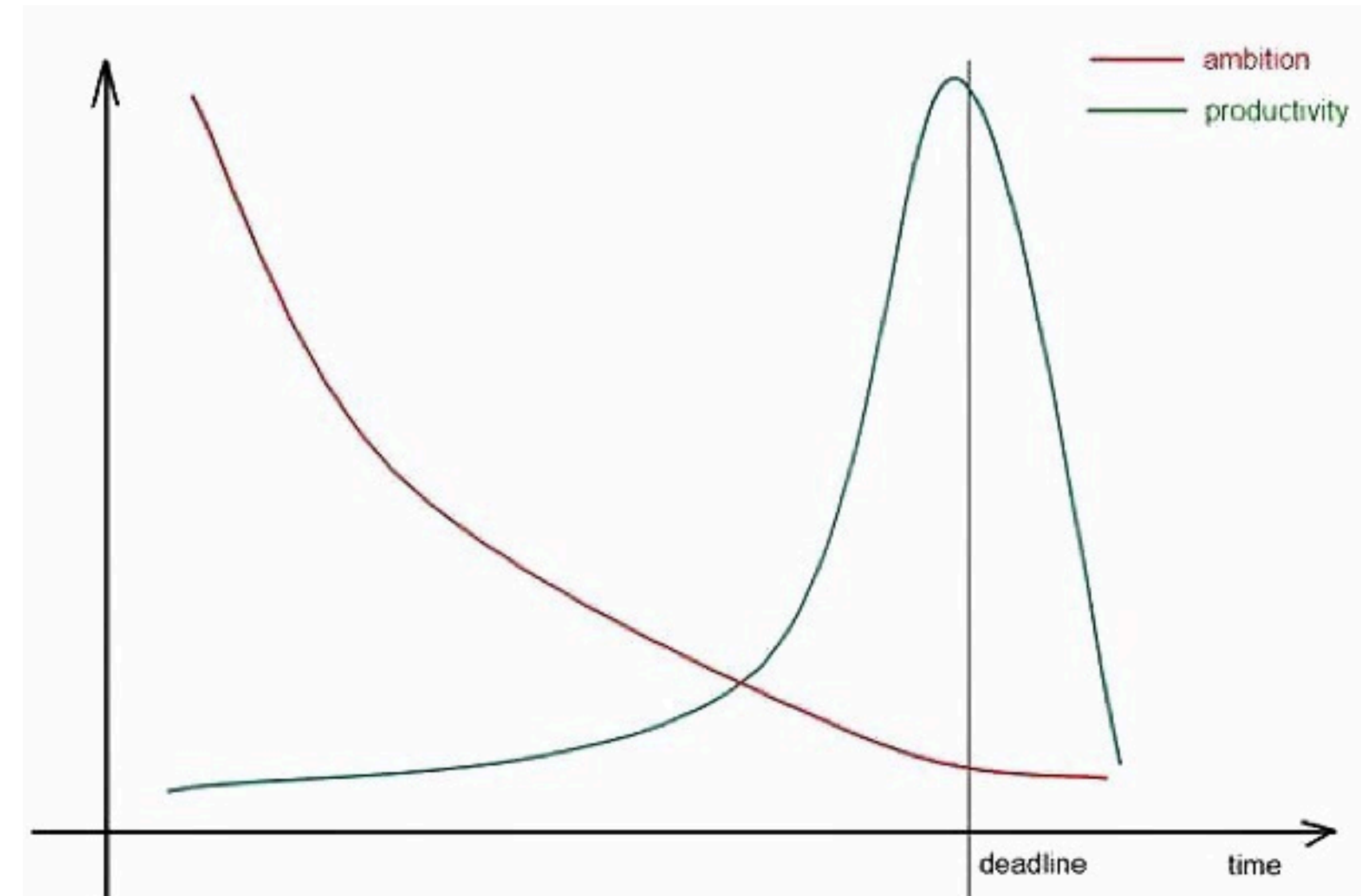
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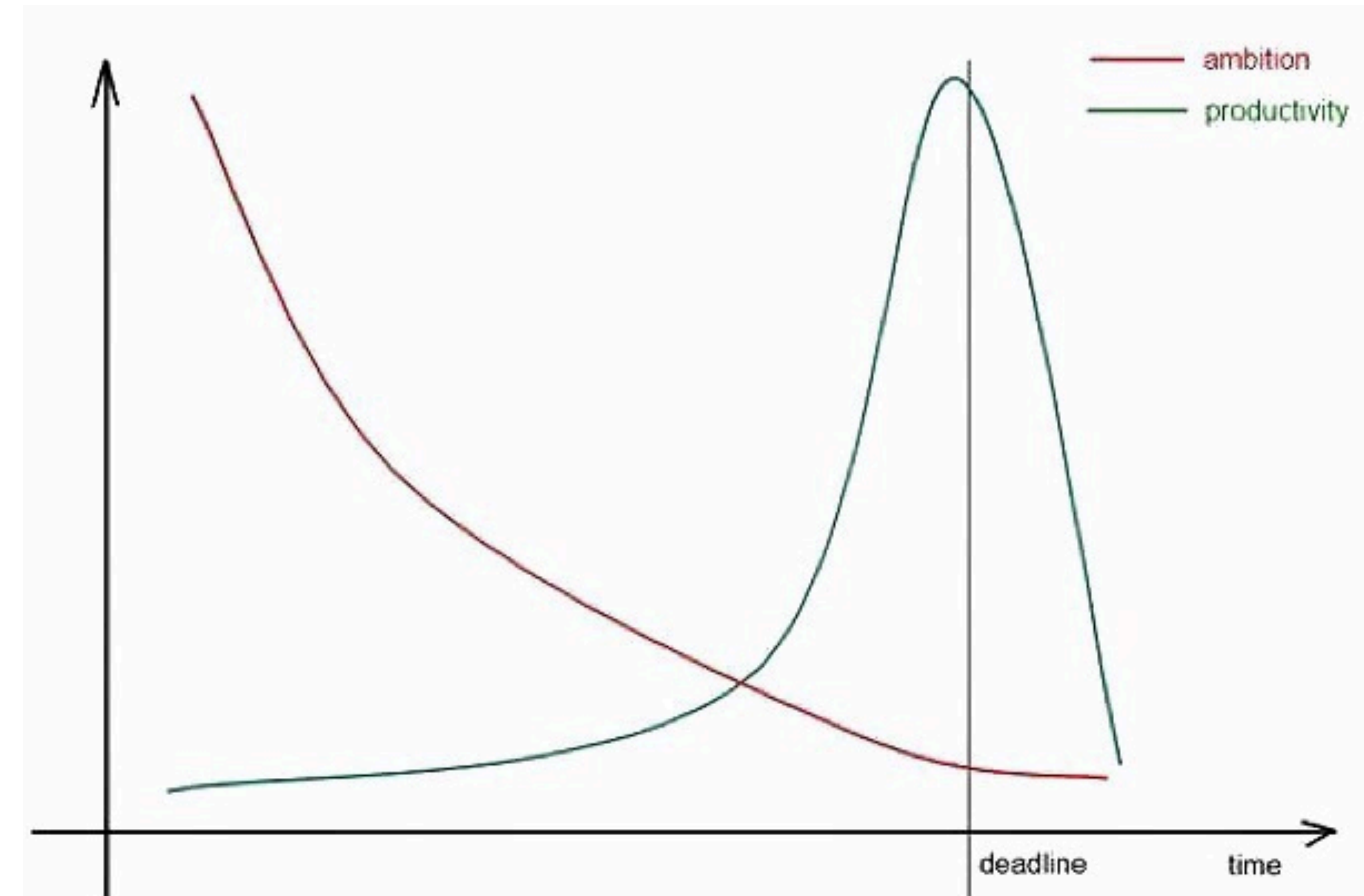
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- Milestones, weekly goals (let students set themselves)
- More frequent meetings





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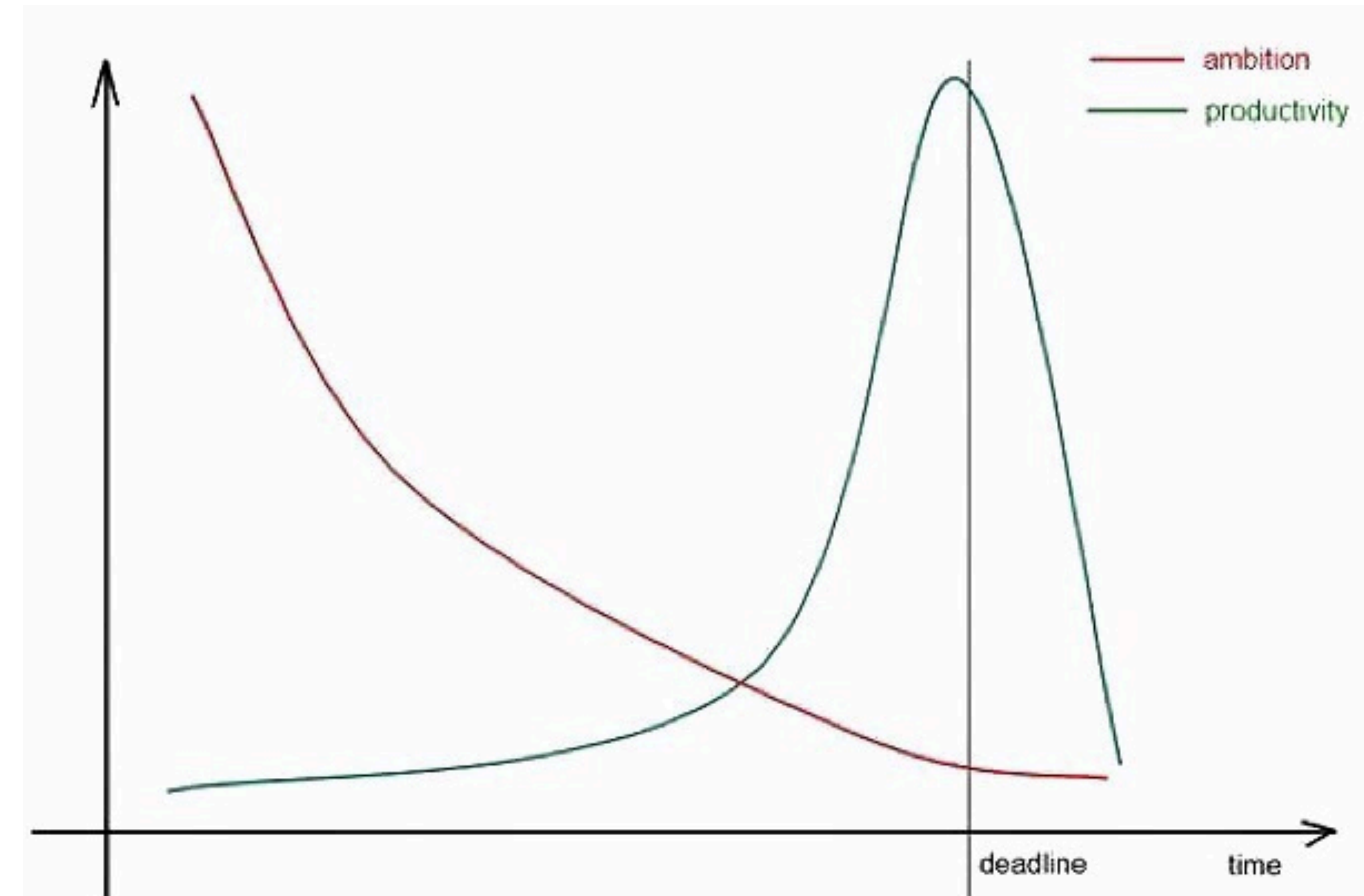
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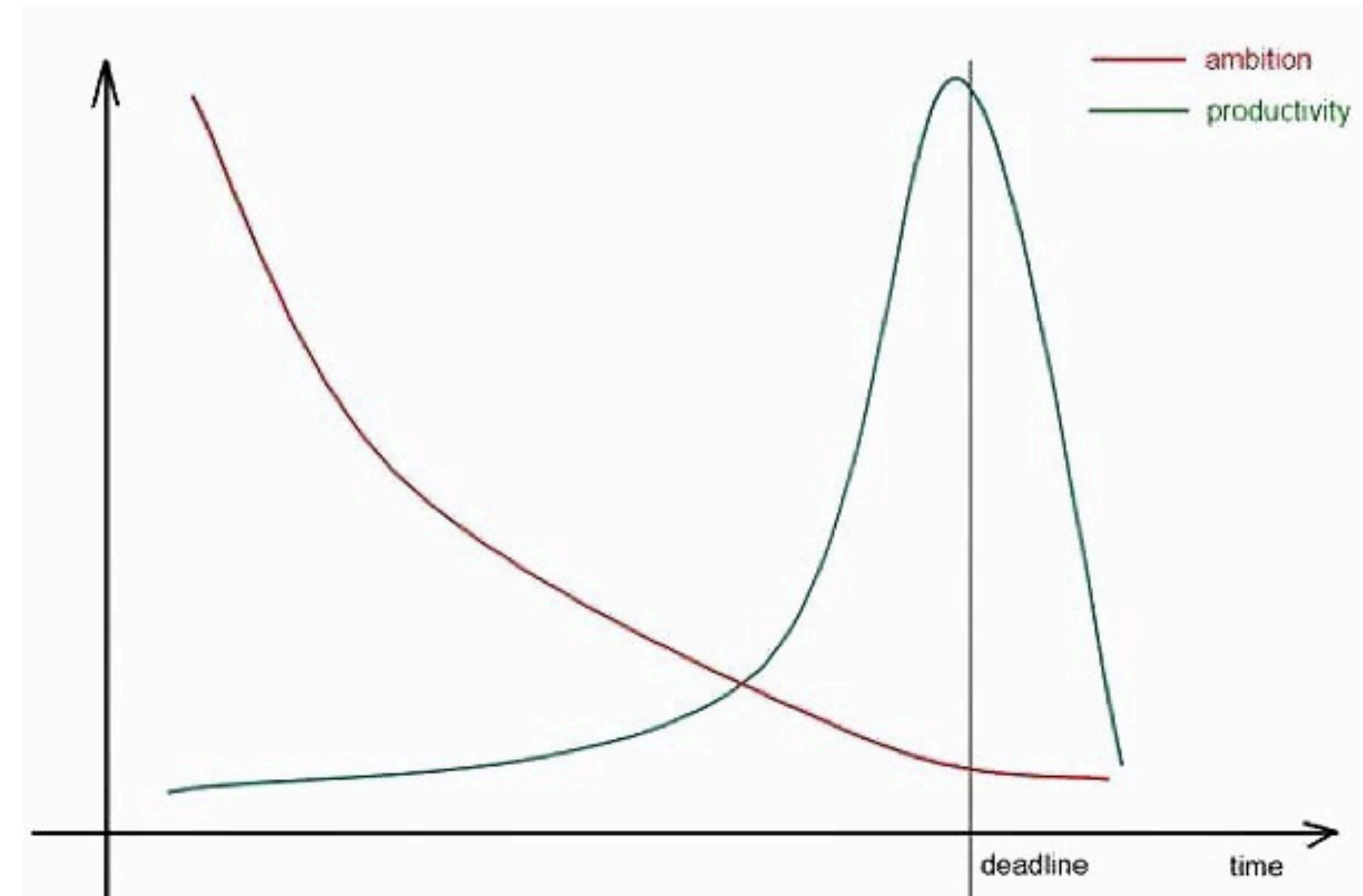
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# Manage Projects

- More deadlines
  - Milestones, weekly goals (let students set themselves)
- More frequent meetings
- Avoid bottlenecks (sometimes it's you)
- Get early feedbacks and keep adjusting
- Use tools and be organized
  - Github, JIRA, Slack, Design docs





# Academic Integrity

- Fundamental values of academic integrity (from ICAI)
  - Honesty, trust, fairness, respect, responsibility, and courage
- You'll see the dark side. Don't let it affect you!
- Talk to trusted senior members, believe in the good
- Help improve the system and our community

hope





# **My Midlife Crisis and How I Deal with It**



# My Midlife Crisis:





# My Midlife Crisis:

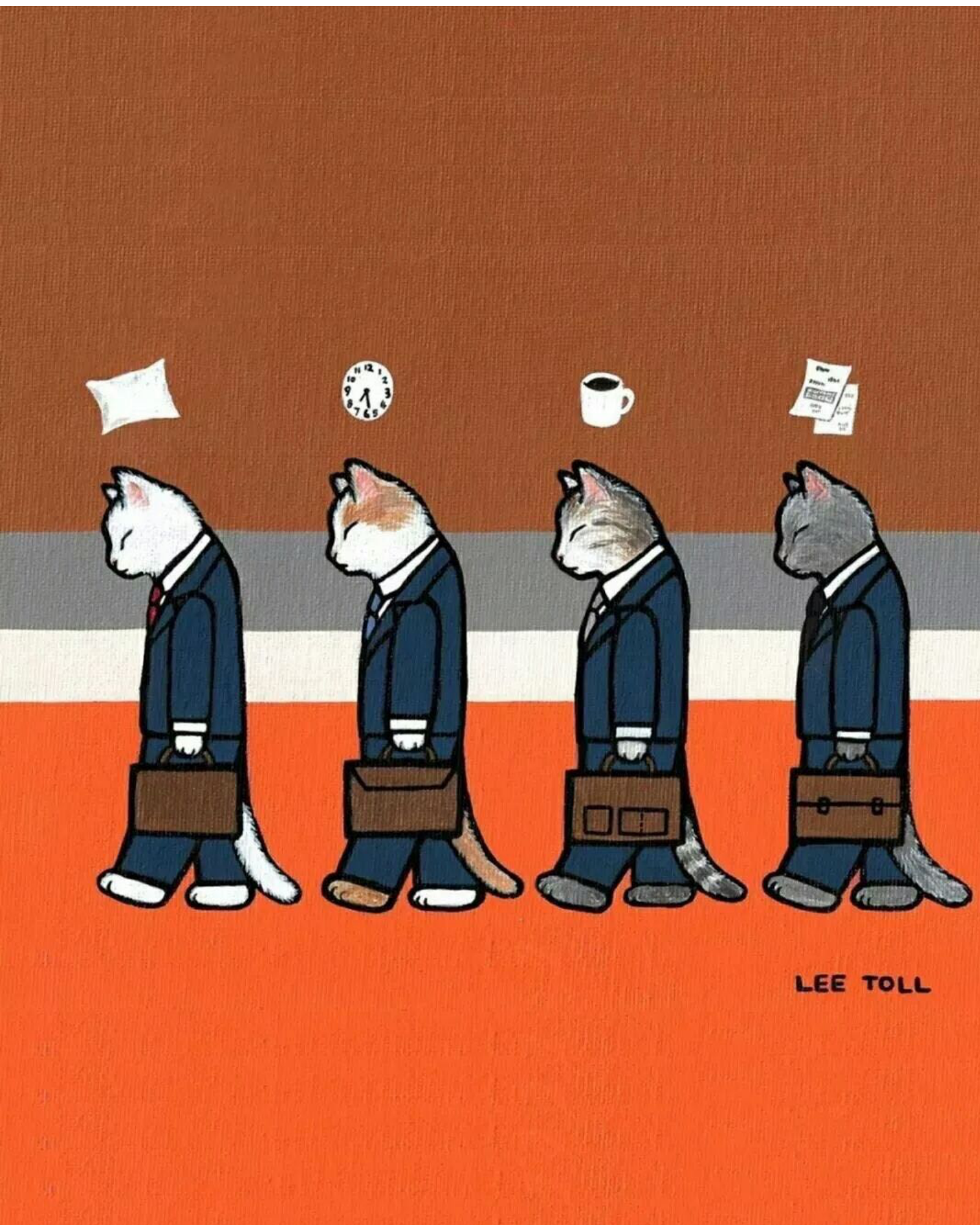


- Will my work actually make an impact?
- Is any of these meaningful?
- What's the meaning of my life?



# My Midlife Crisis:

# Worth



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- Is any of these meaningful?
- What's the meaning of my life?

*Focus on now and the fun, i.e., think less*



# Rewards from Students



# Rewards from Students





# Rewards from Students



**shinyehtsai** 7:31 PM

Ohhhhhh I feel so amazing.

Thank you and thank you.

I can't fully explain my happiness in the phone call



**yiying** 7:42 PM

It's good that you didn't give up Ph.D. 😊



**shinyehtsai** 7:43 PM

Thank you

I would definitely have a smile on my face tonight when I sleep.

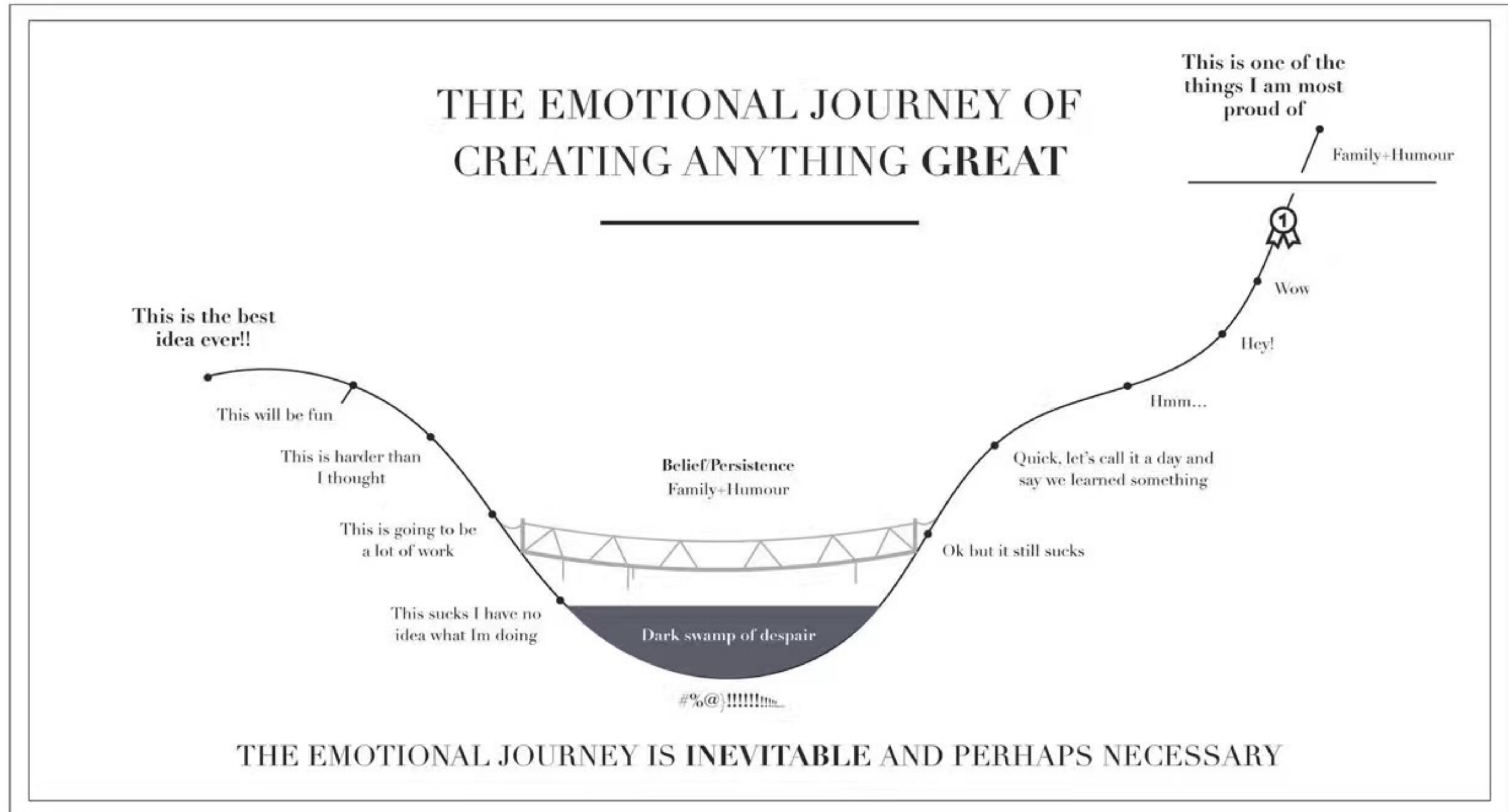


**yiying** 7:44 PM

haha

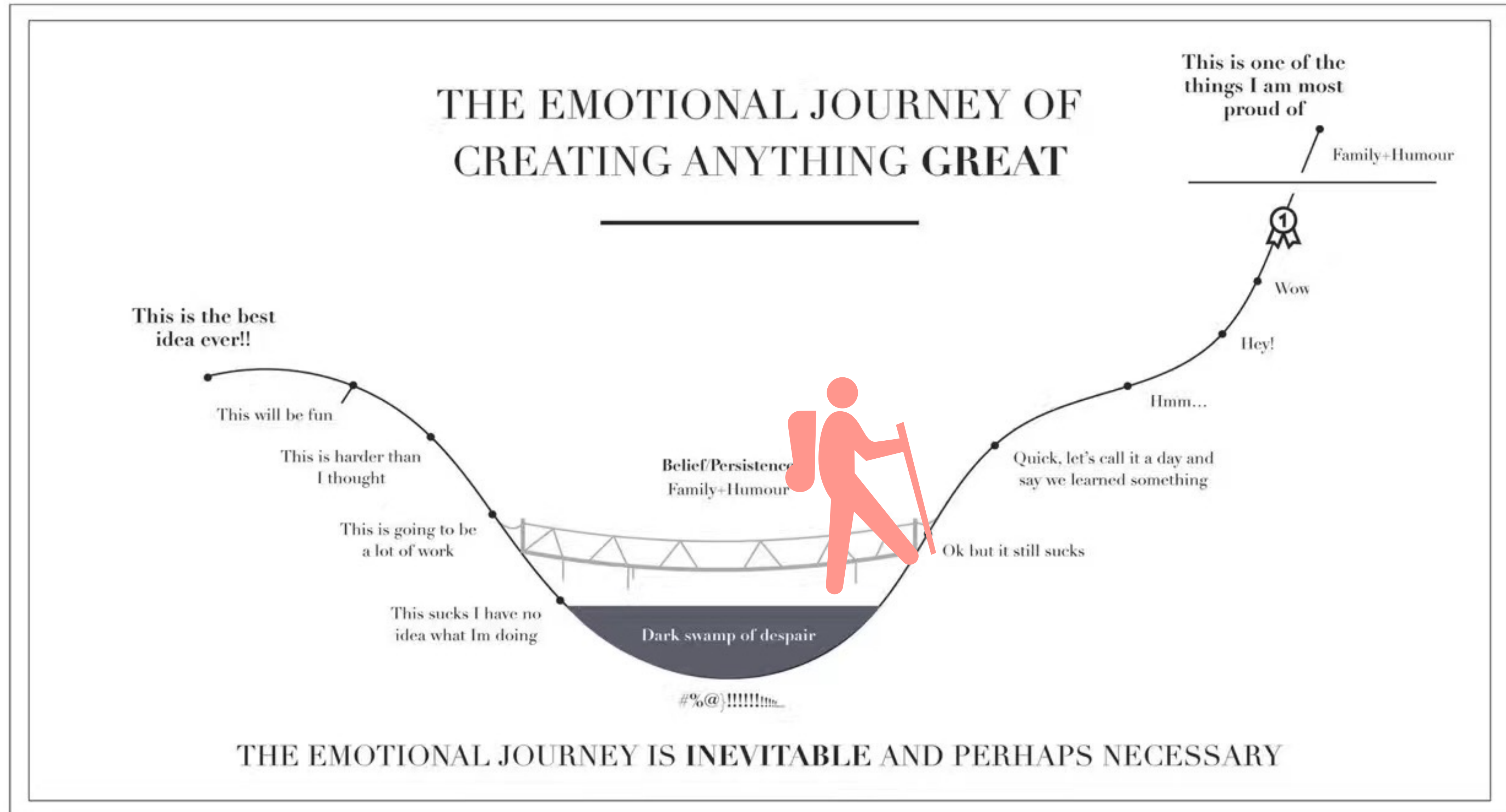


# Excessive reserves of self-confidence



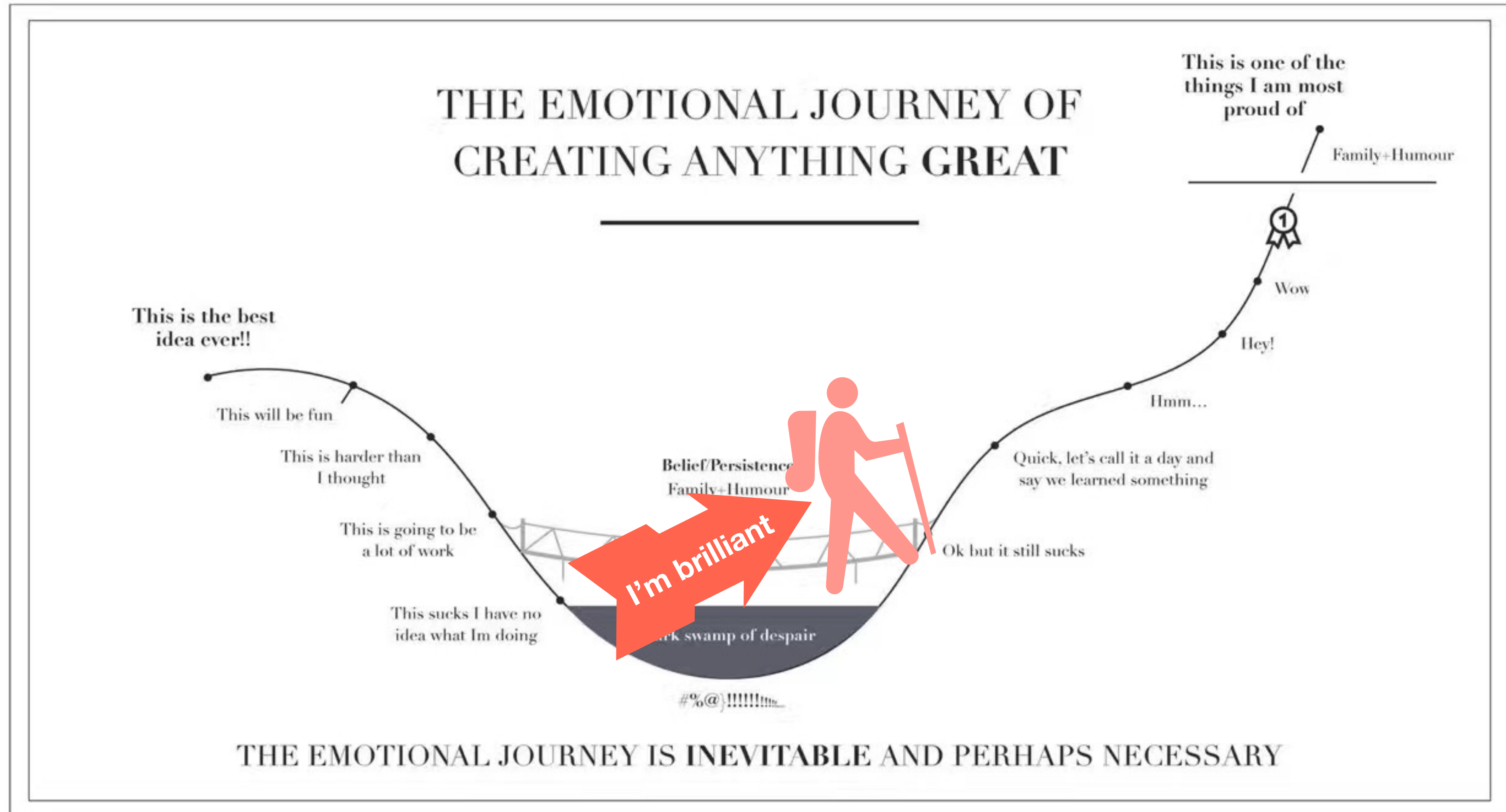


# Excessive reserves of self-confidence



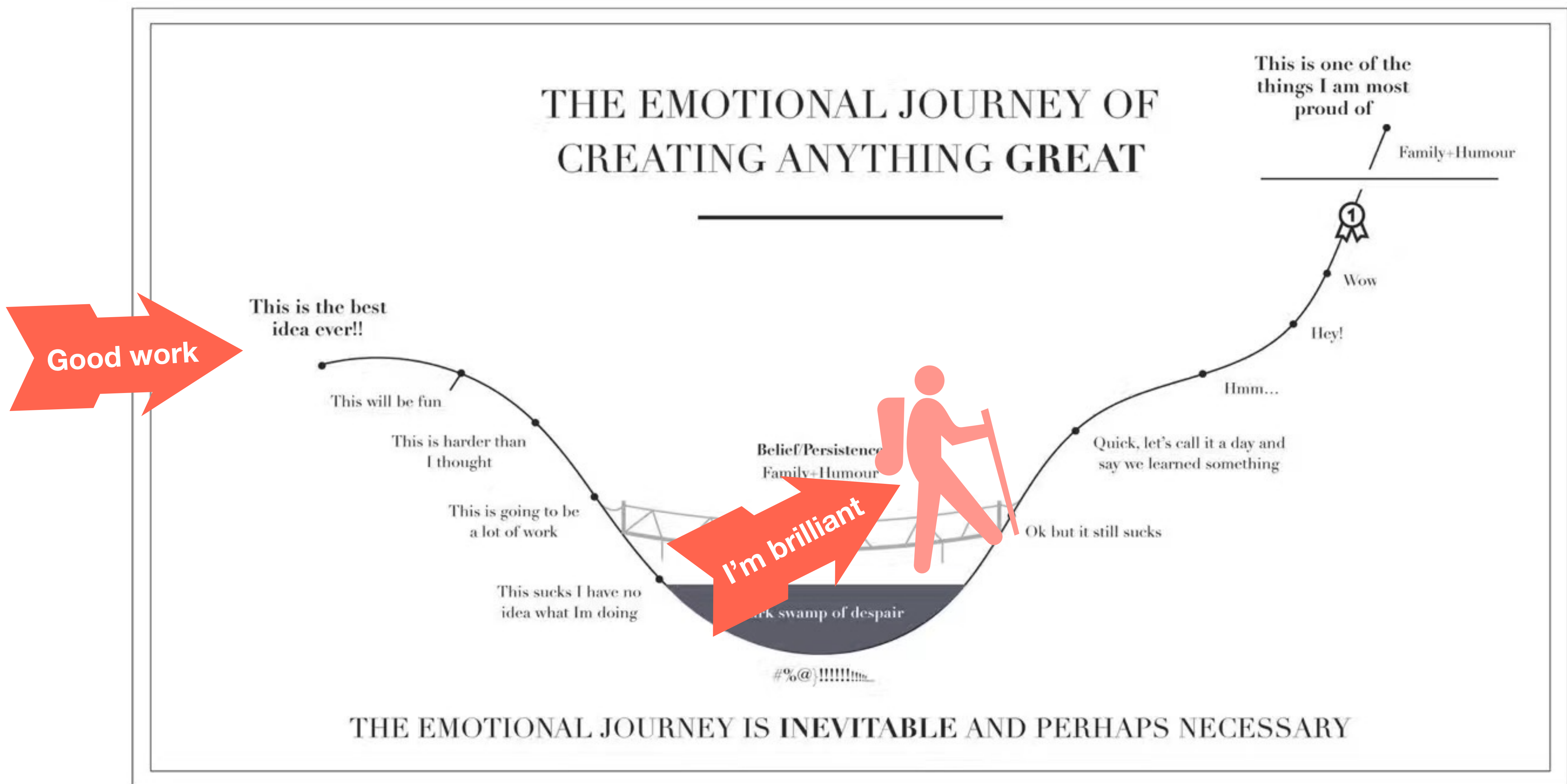


# Excessive reserves of self-confidence





# Excessive reserves of self-confidence





- It does not matter how good I am.
- As long as I love the work that I do, and people are willing to pay me to do it,
- As long as I continue to learn through my work, to learn from my students, colleagues, and collaborators, at the same time that they seem to be learning from me,
- As long as I can see new directions for my work, to expand my knowledge and perhaps others' as well,
- As long as there is a chance, even a slim one, that I can create something that will change the way people think, or in a small way, improve the way the world works,
- As long as I can do all this, it does not matter how good I am. As long as there remains much to do, I am going to try to do it, whether I am good enough or not.
- Even if I reach the end of my career, and never do something that ever fully matches my ambitions, my work will have accomplished something, even if indirectly and in a small way. I have had the privilege to participate in the worldwide, centuries-long conversation of the community of scholars. And this larger conversation has made a difference, I am sure, even if my own part has been small. I have been part of the life of the research community, preserving, growing, and sharing knowledge. That is enough to make my professional life worthwhile, even after all the papers that I've written have faded into obscurity.

Source: <http://www.theexclusive.org/2018/09/impostor.html>



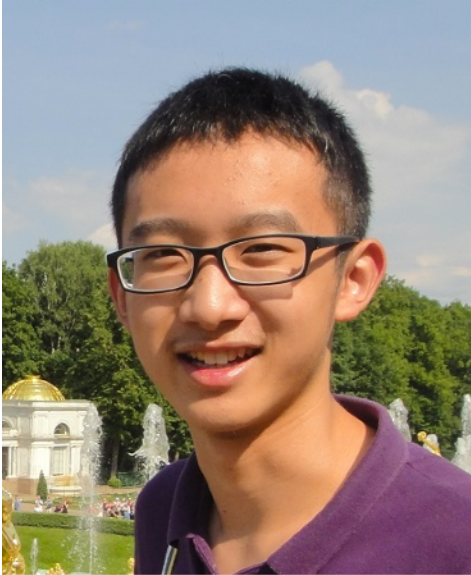
# Research in Academia: Best job in the world?

It is the best job in the world for me!

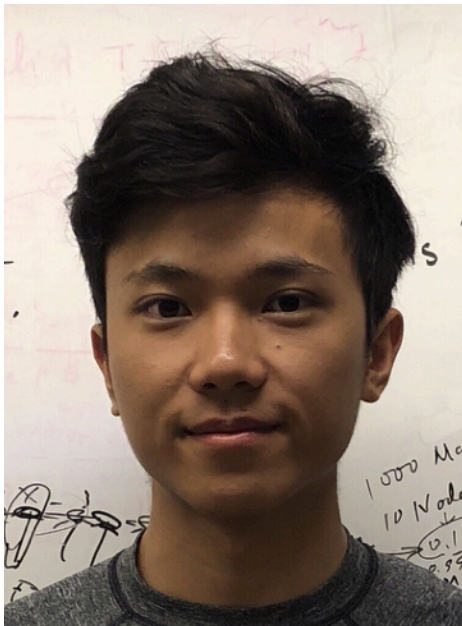
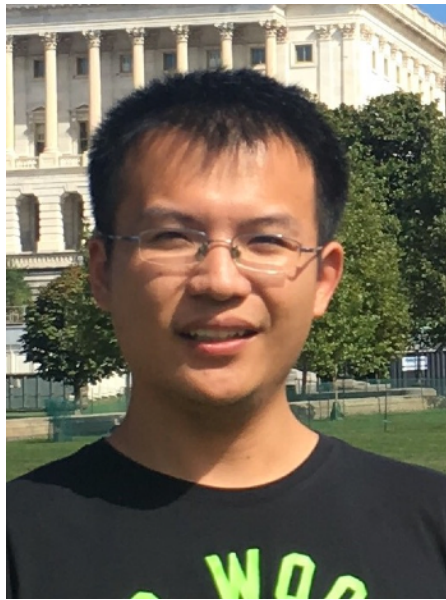
Not the best job for everyone



Current students



Alumni

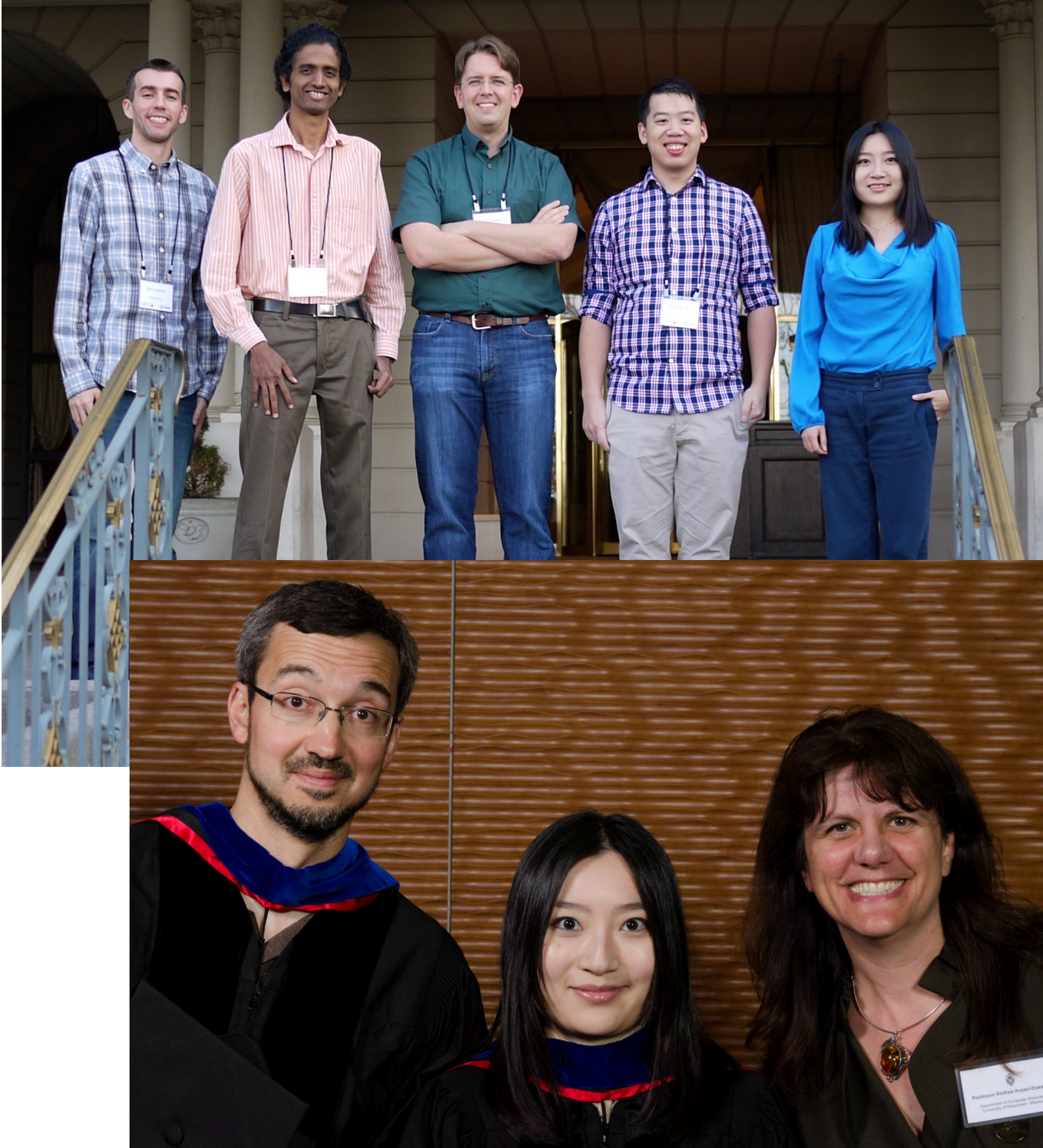
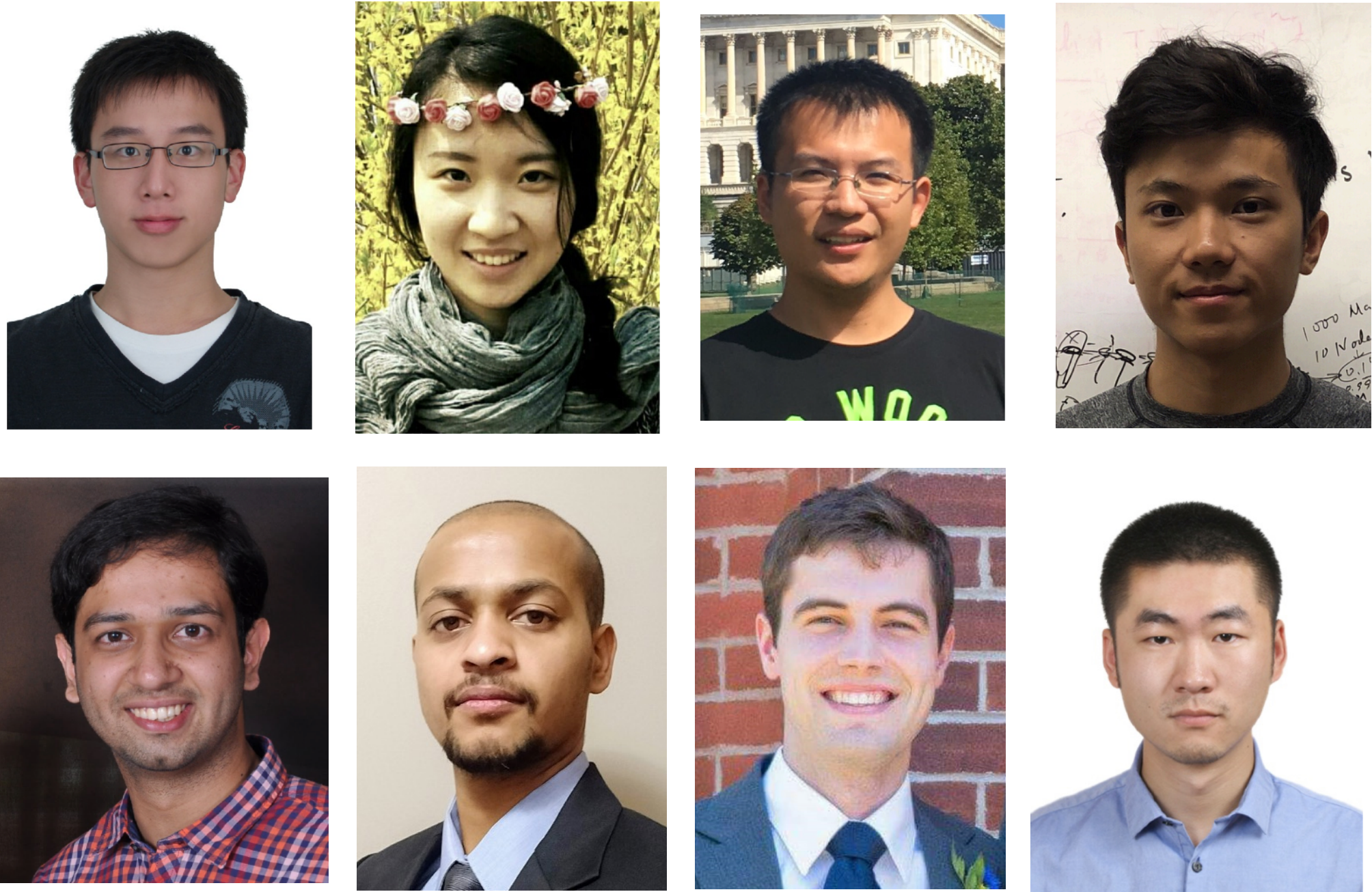




Current students



Alumni









**Thank you!  
Questions?**

*@WukLab.io*

