

Research in Academia

Yiying Zhang



UCSDCSE
Computer Science and Engineering

@**WukLab**



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Research in Academia

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



UCSDCSE
Computer Science and Engineering





The Secret to Success





About Me



About Me



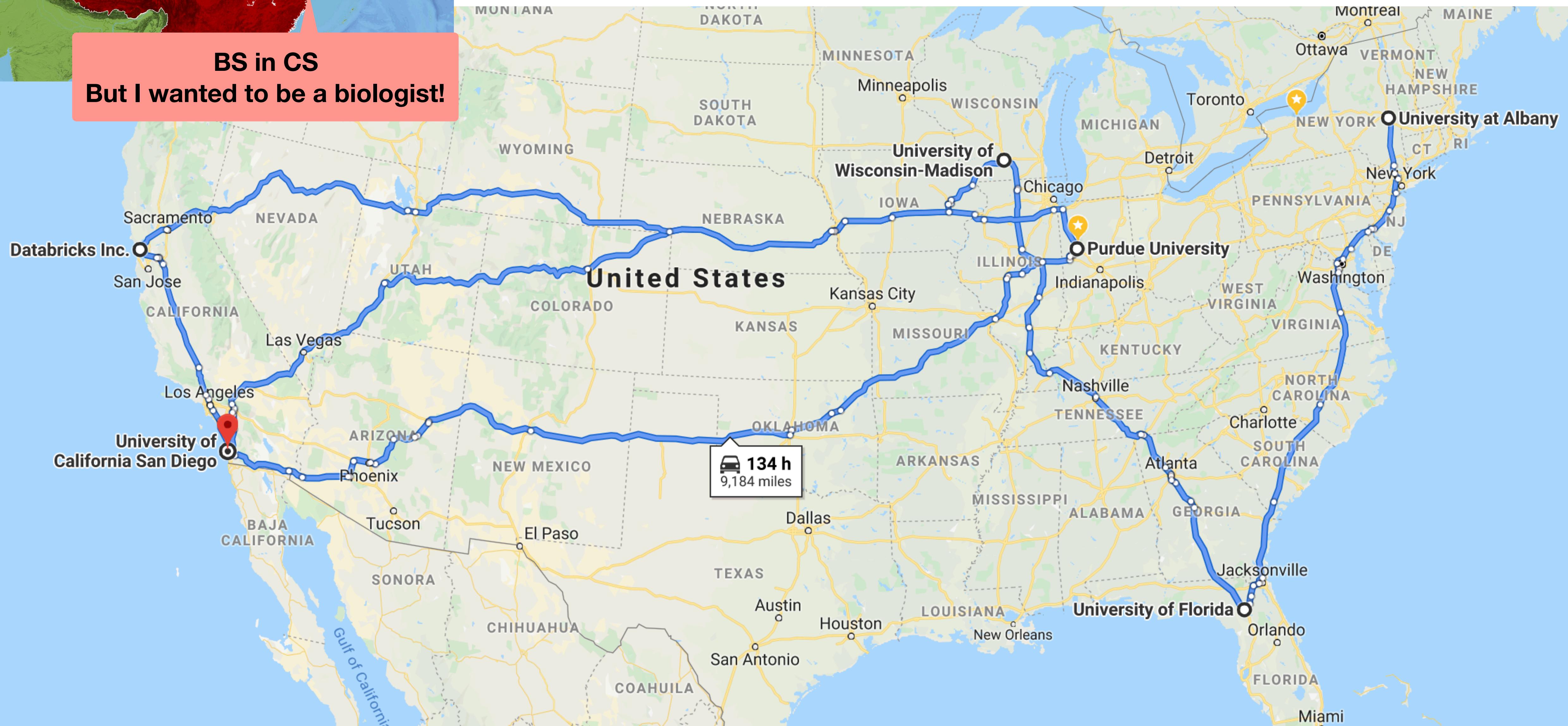
BS in CS
But I wanted to be a biologist!

About Me



About Me

BS in CS



About Me



About Me



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BS in CS
But I wanted to be a biologist!

6 years PhD, HPC->DB->storage
No paper until 5th year

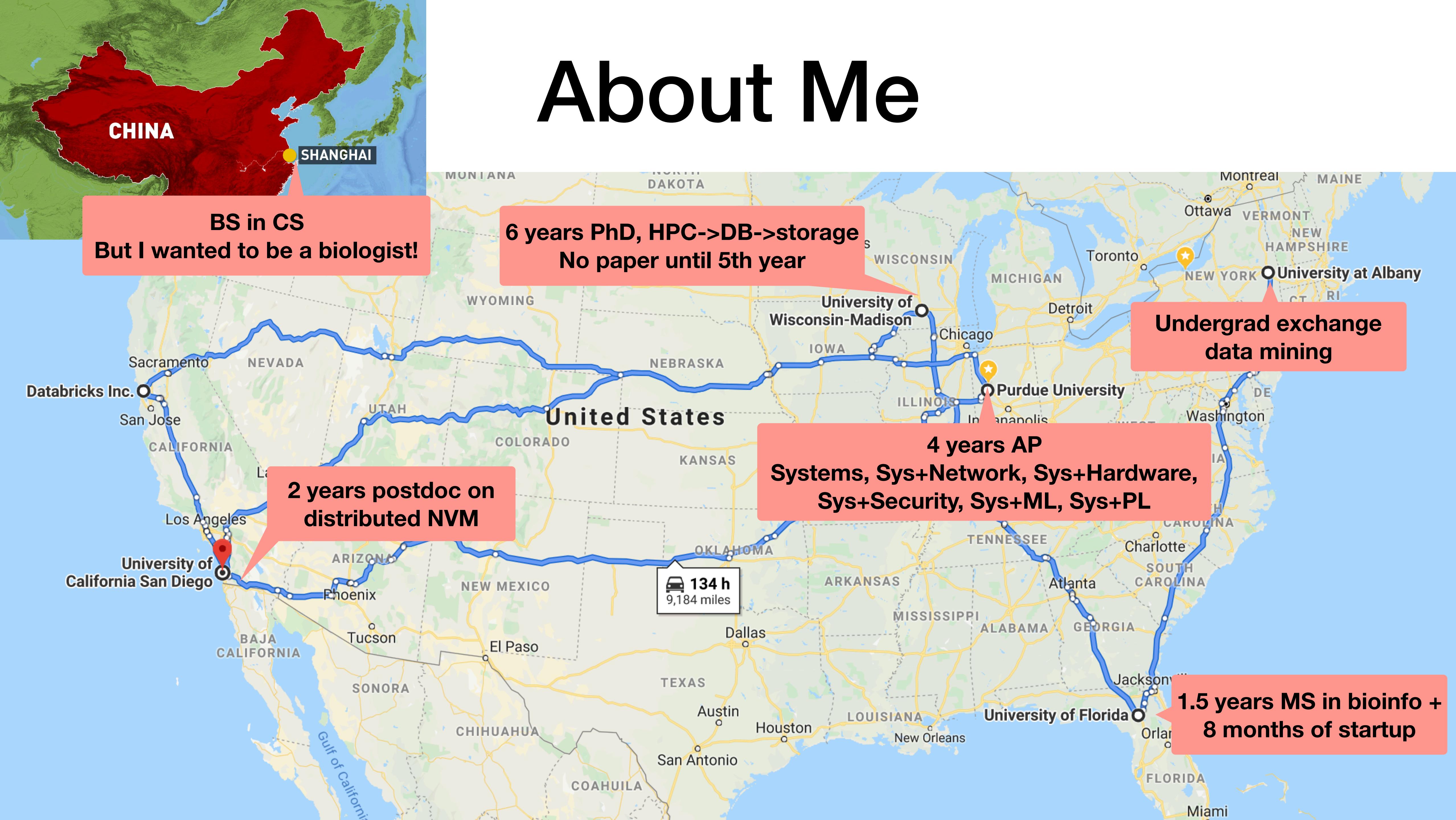


**1.5 years MS in bioinfo +
8 months of startup**

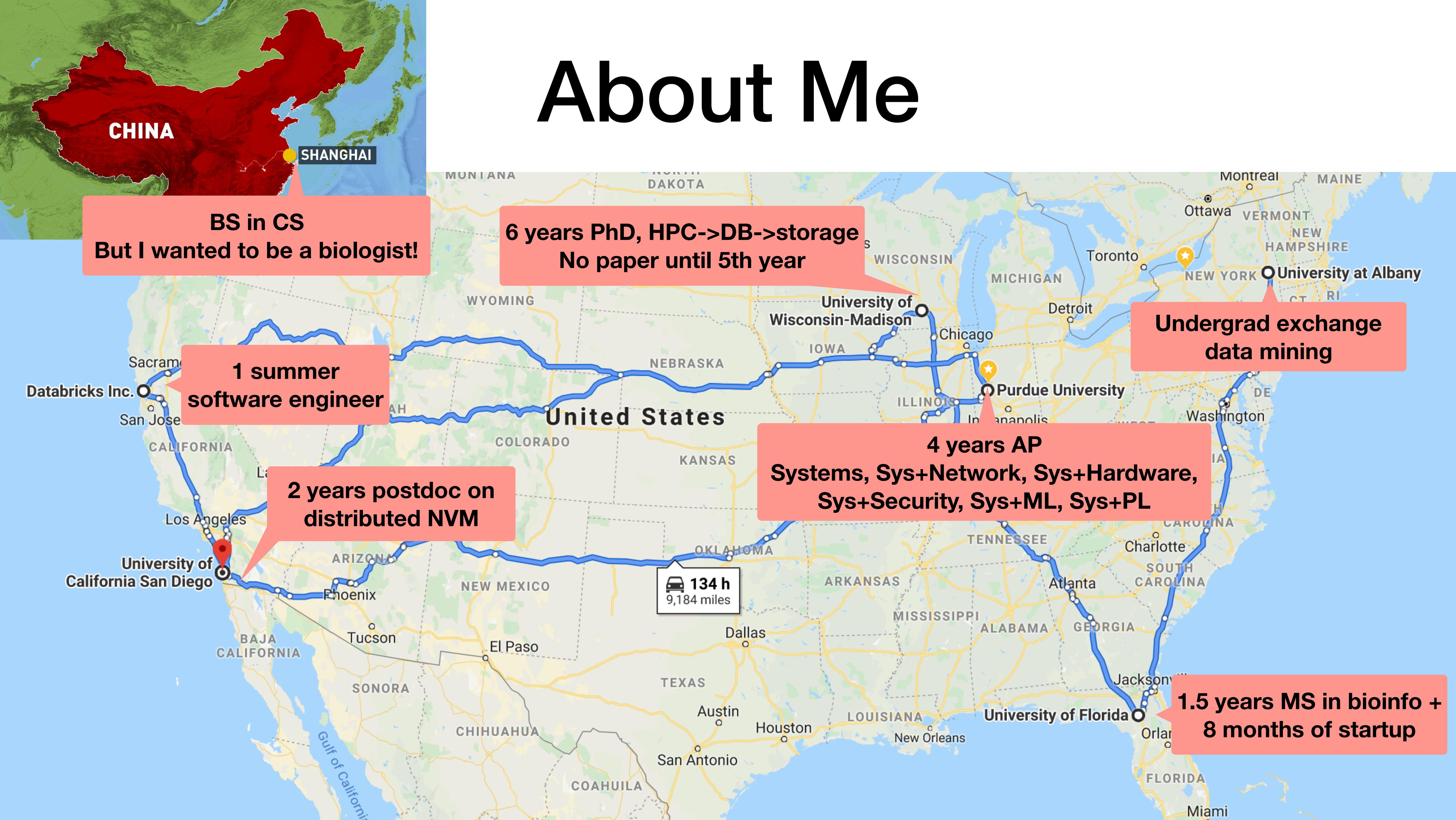
About Me



About Me



About Me



About Me



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?

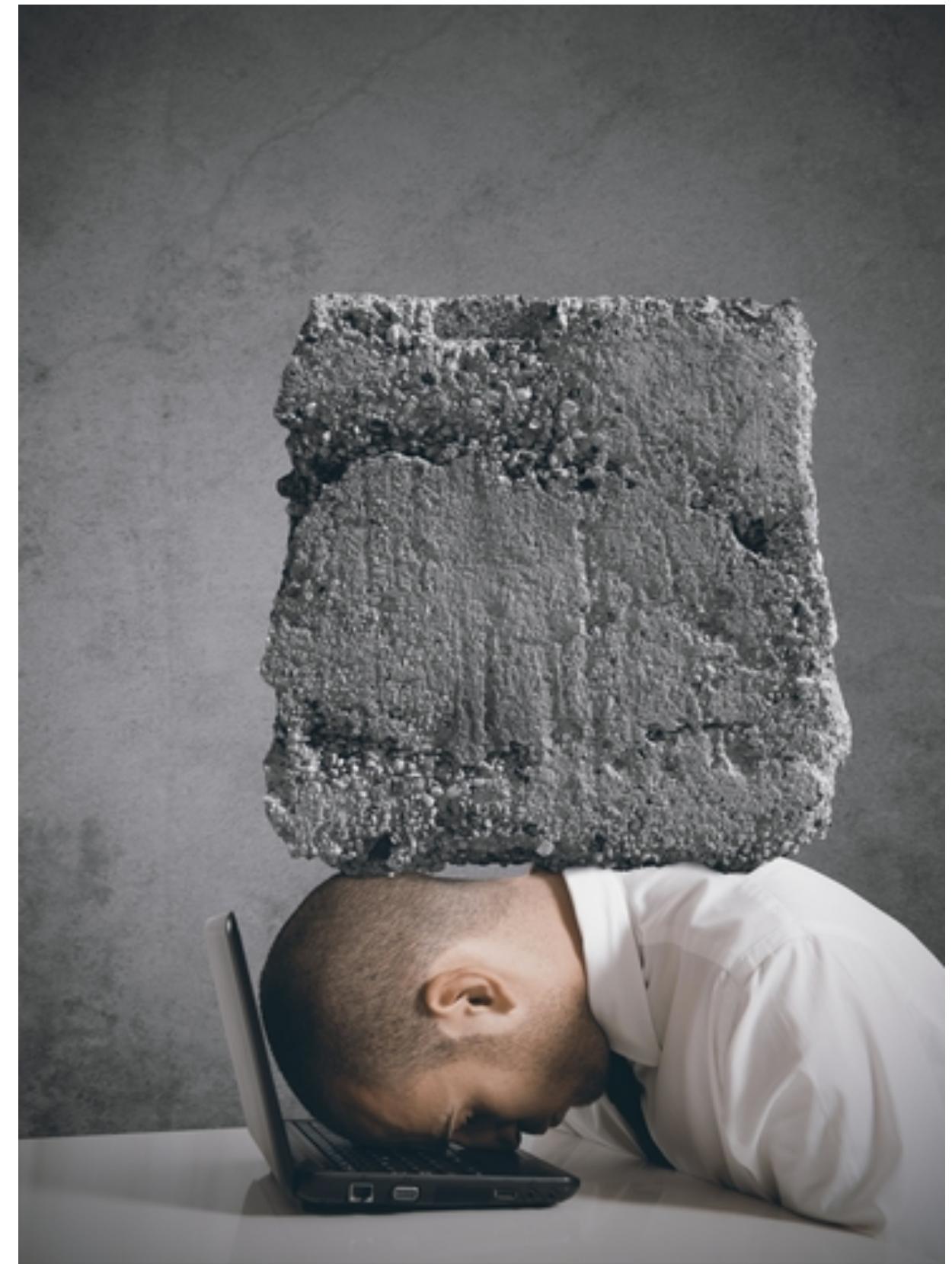
Research in Academia: Best job in the world?

- 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

ACADEMIA

PRO

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



JORGE CHAM © 2017

CON

YOU WORK ON SATURDAYS.



What my days look like?

	Mon	Tue	Wed	Thu	Fri	Sat	Sun
9am							
10am			Teach		Teach		
11am		Office hour	Group meeting		Faculty Meeting		
Noon		Lunch w/ faculty	Seminar/Lunch				
1pm	Seminar/Lunch	Project1			Project1		
2pm		Project2			Project2		
3pm		Project3			Project3		
4pm		Project4			Project4		
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6pm							
7pm							
8pm	Project5	Prep class		Prep class			
>9pm							

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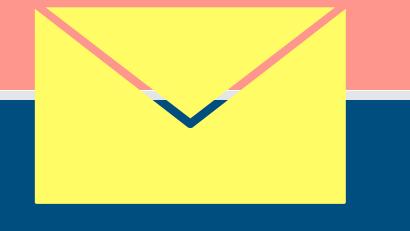
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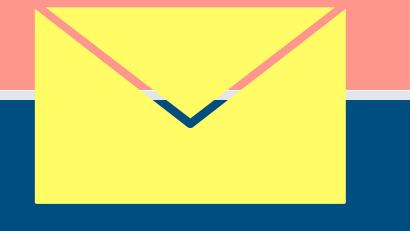
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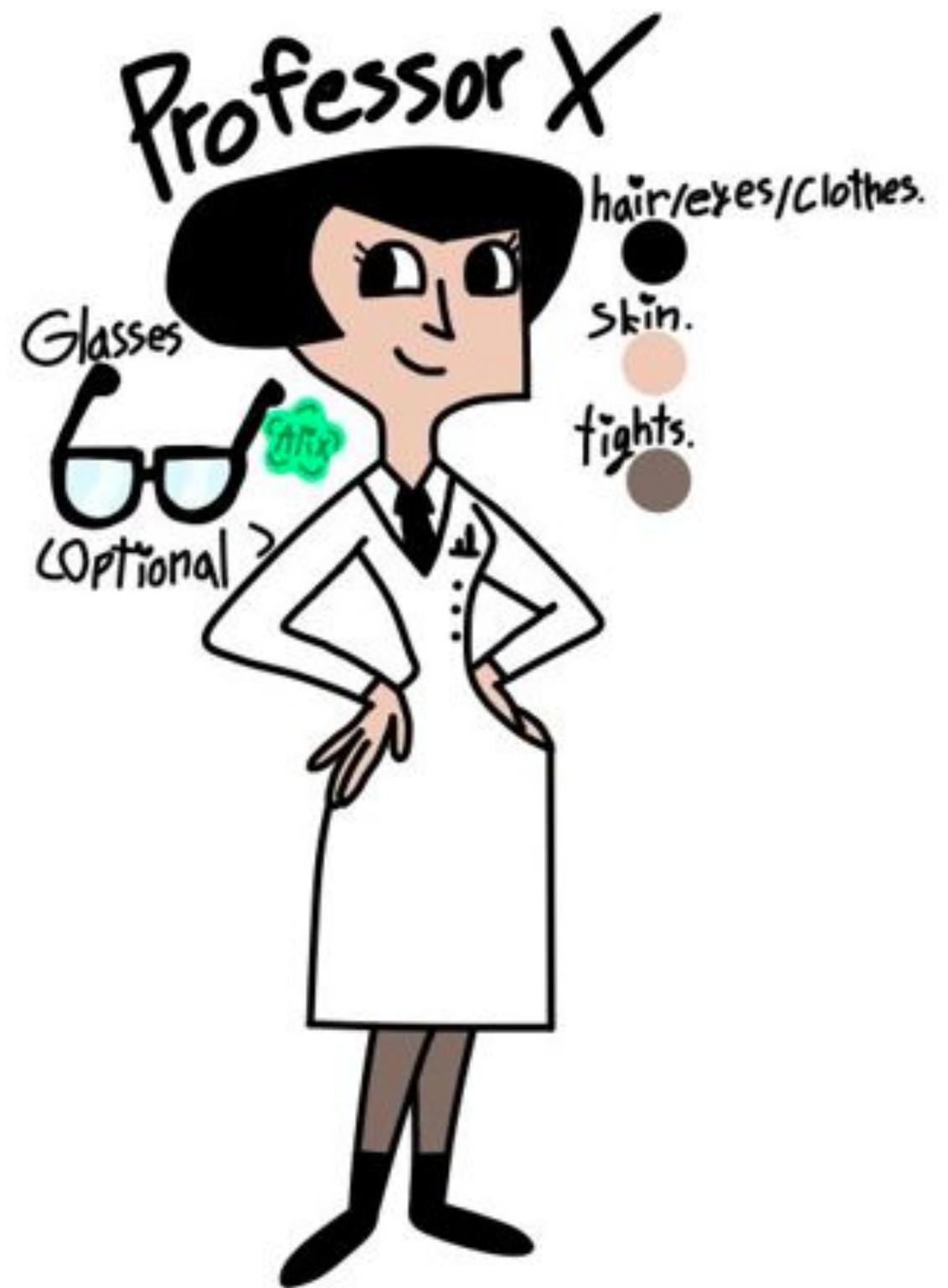
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- CTO
- CFO
- Manager
- Program manager
- Tech lead
- Software engineer
- HR
- Sales
- Teaching + Service

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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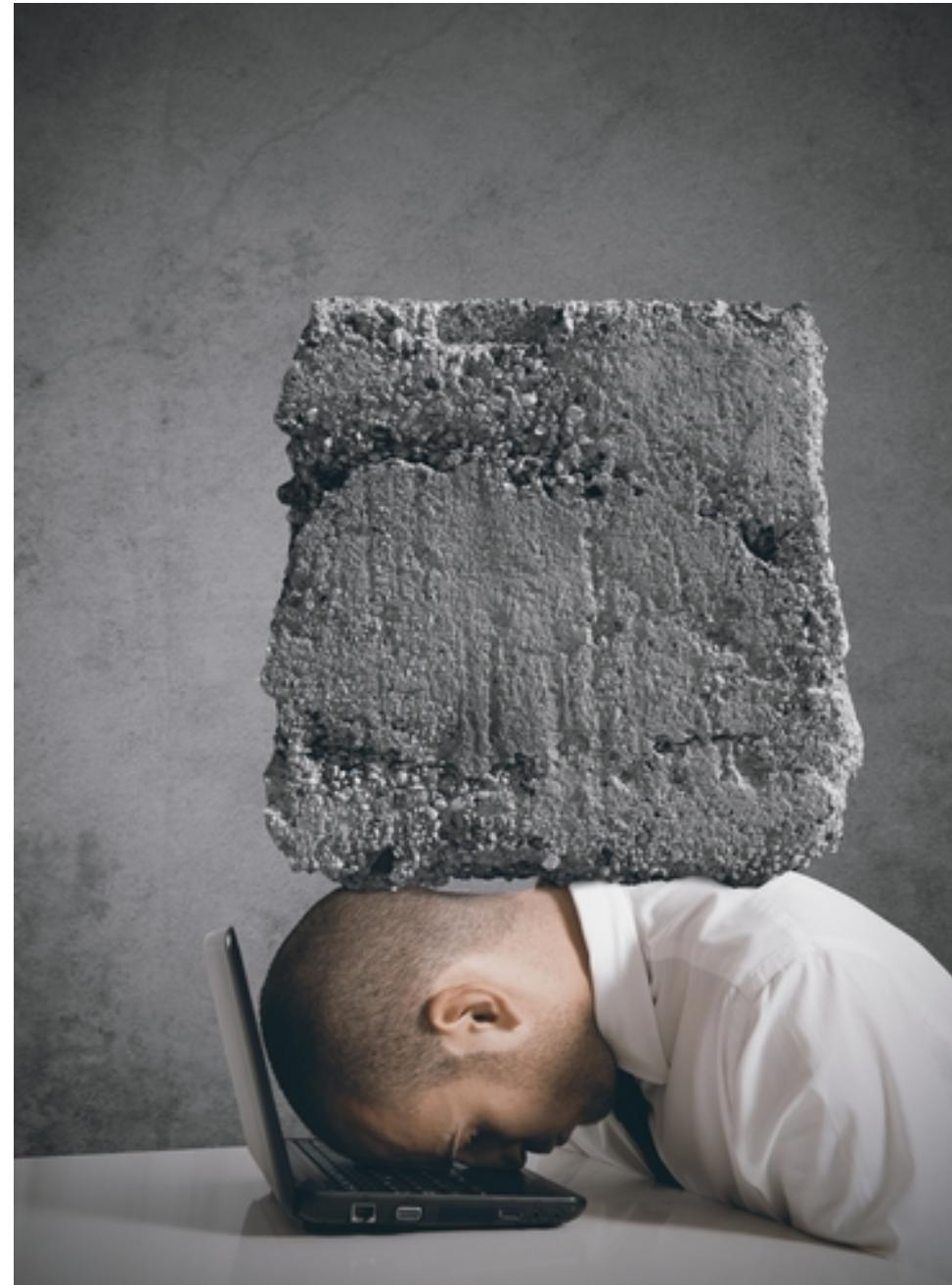
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- Learn to say NO; do multiple long-term plans



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

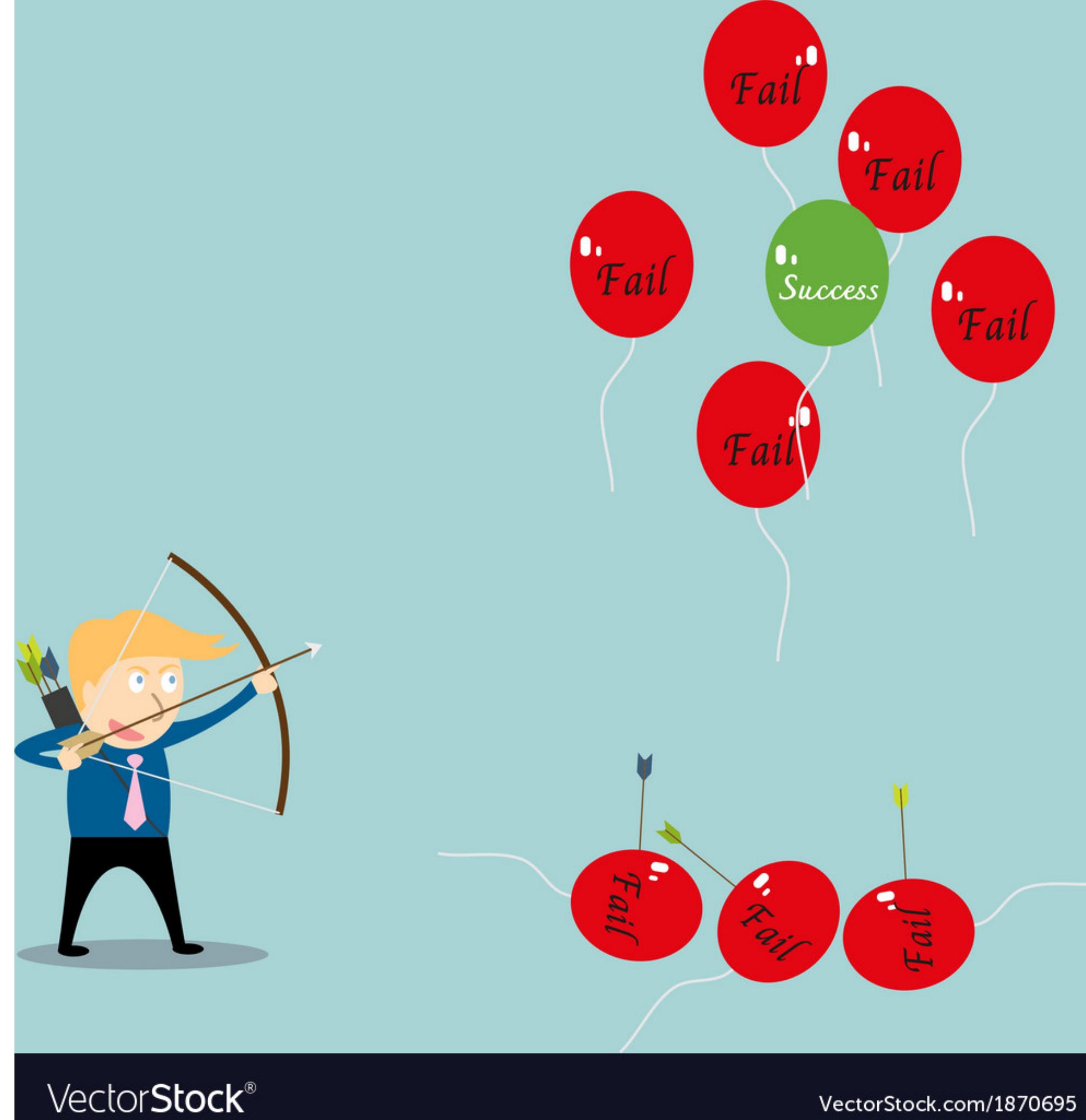
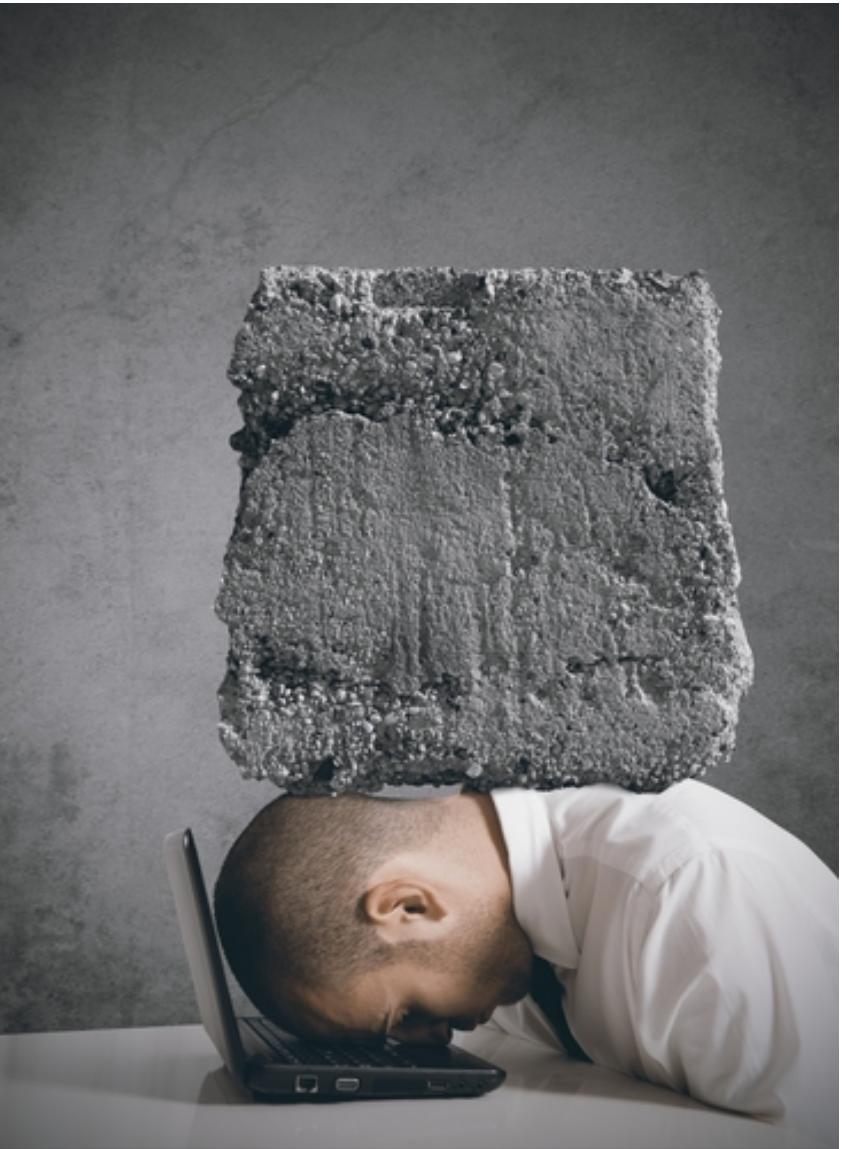
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 - No one cites you
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- Work that becomes obsolete the minute you publish it
- Once in a while, you may hit something truly great (or not)



Students are (Largely) Your Responsibility

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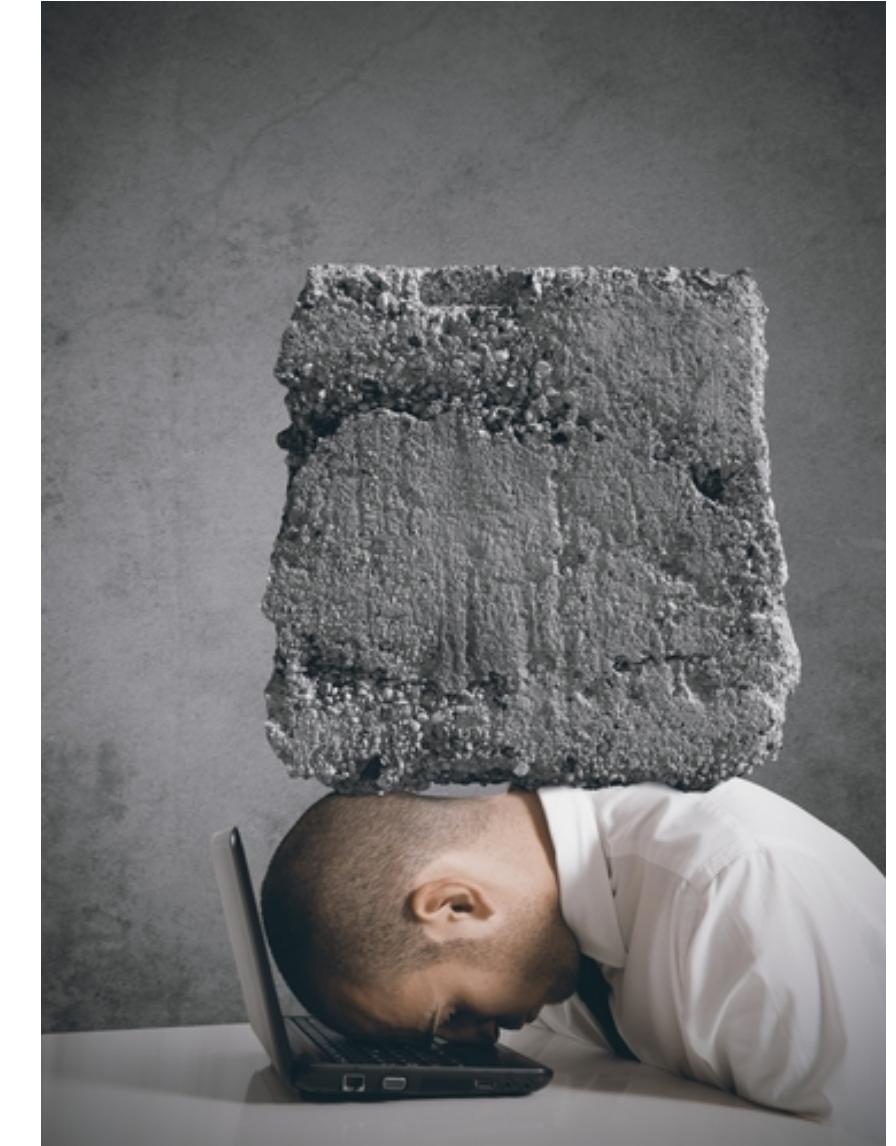
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 - to make the right **decisions**
 - to protect them from **risks**
 - to pay them, to get papers in, to graduate them, to help them find a job

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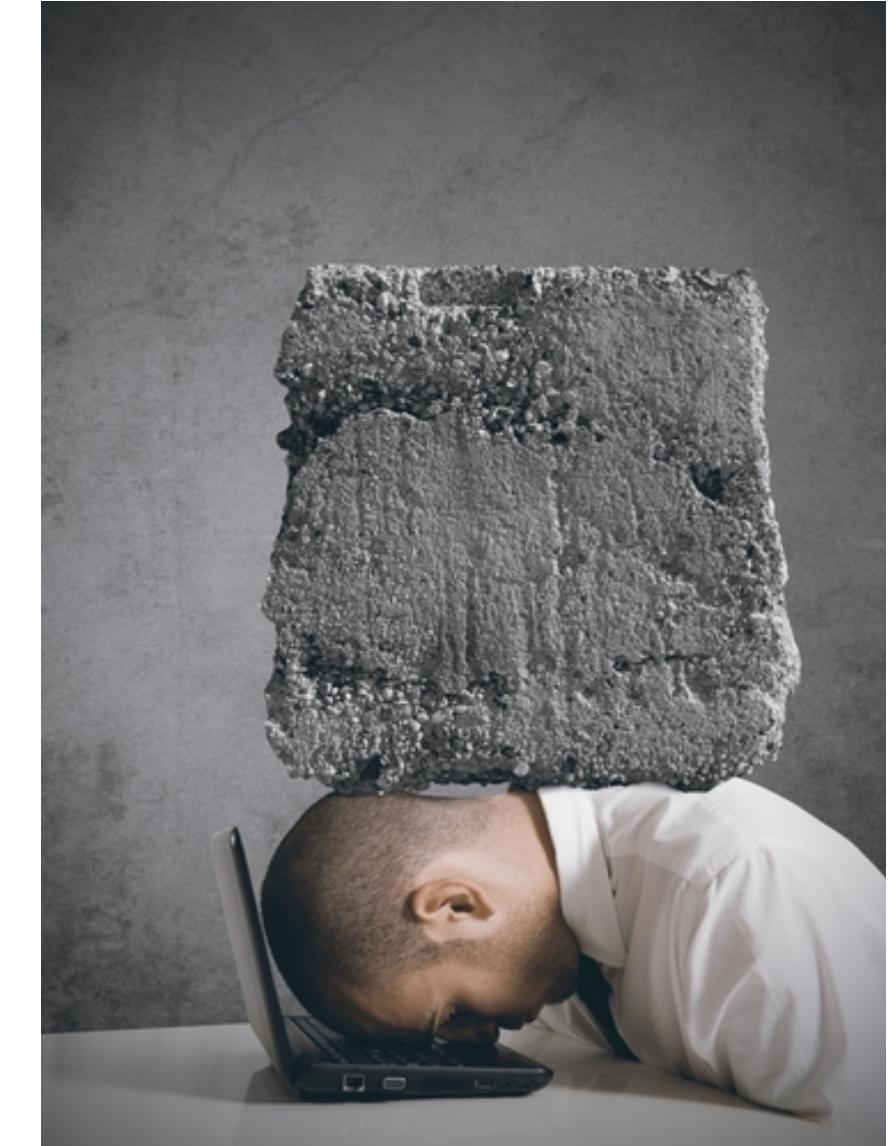
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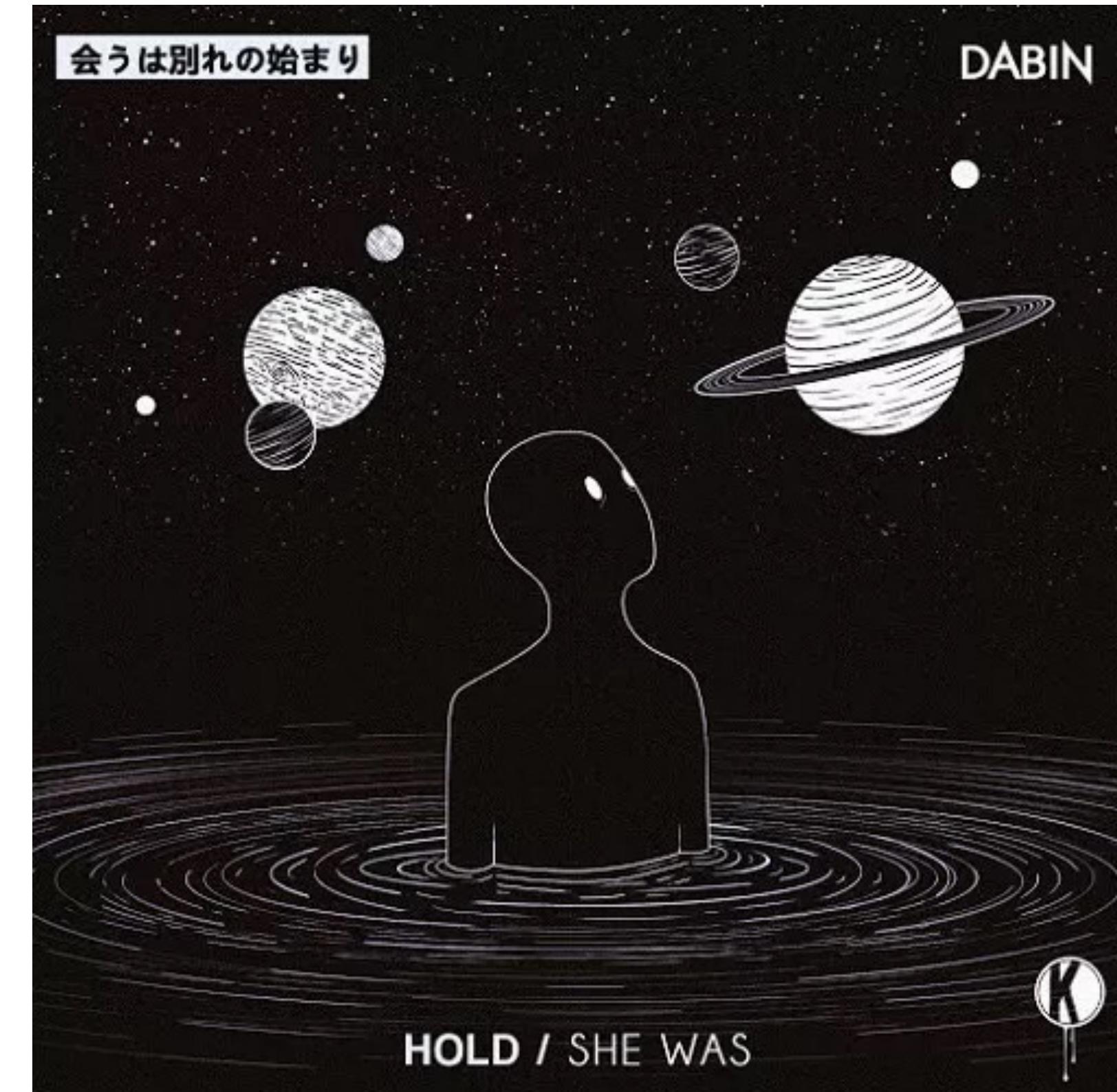
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Students are also sources of joy and rewards!

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

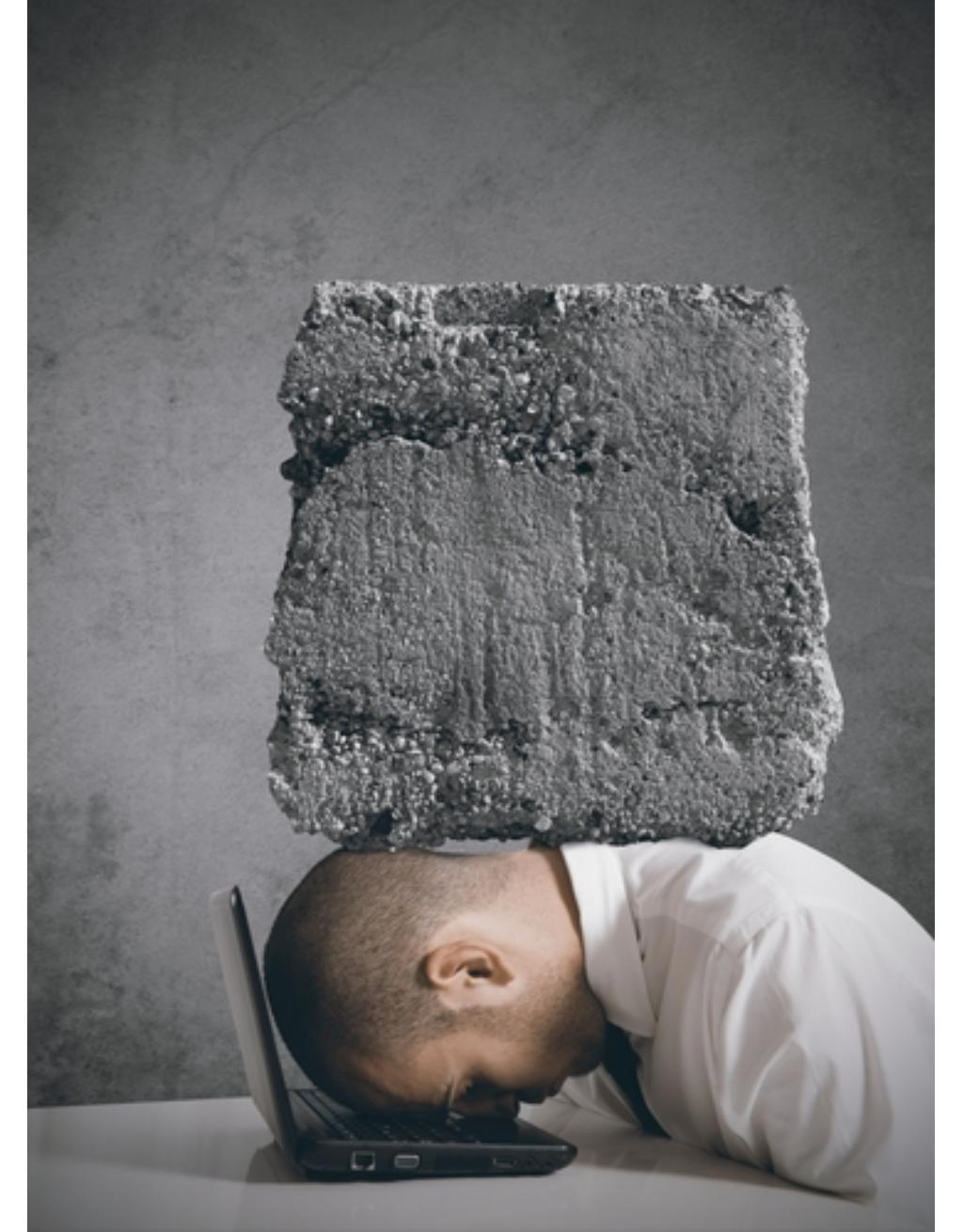


A Long Journey

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

N E V E R
S E T T L E

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

Tenure Pressure?

- Remzi Arpaci-Dusseau:

Do good work and everything else will follow

Tenure Pressure?

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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

Industry vs. Academia (Engineer vs. Researcher)

Vertical

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Horizontal

- Industry: immediate real impact, real responsibility
- 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 :)*

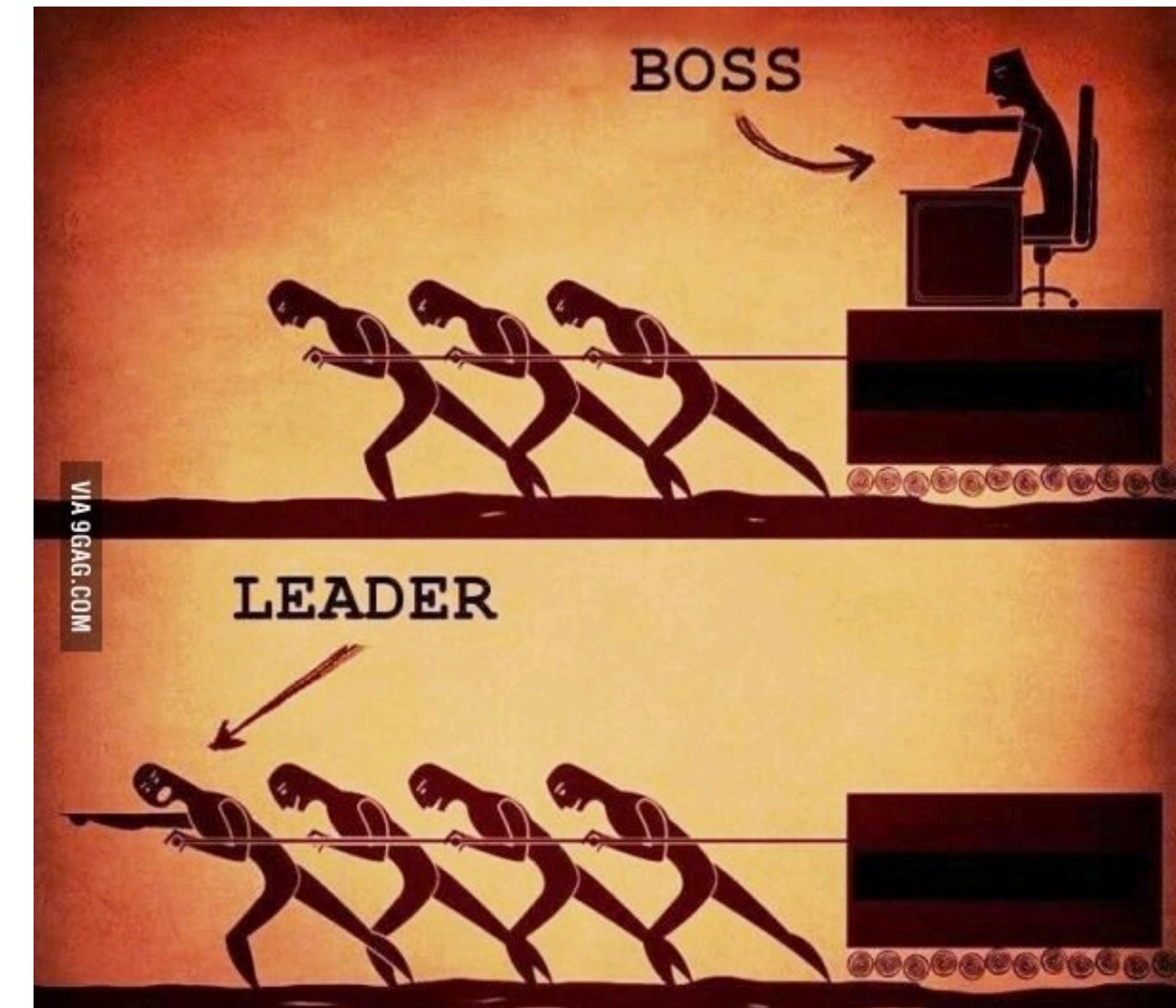
Some practices I find useful

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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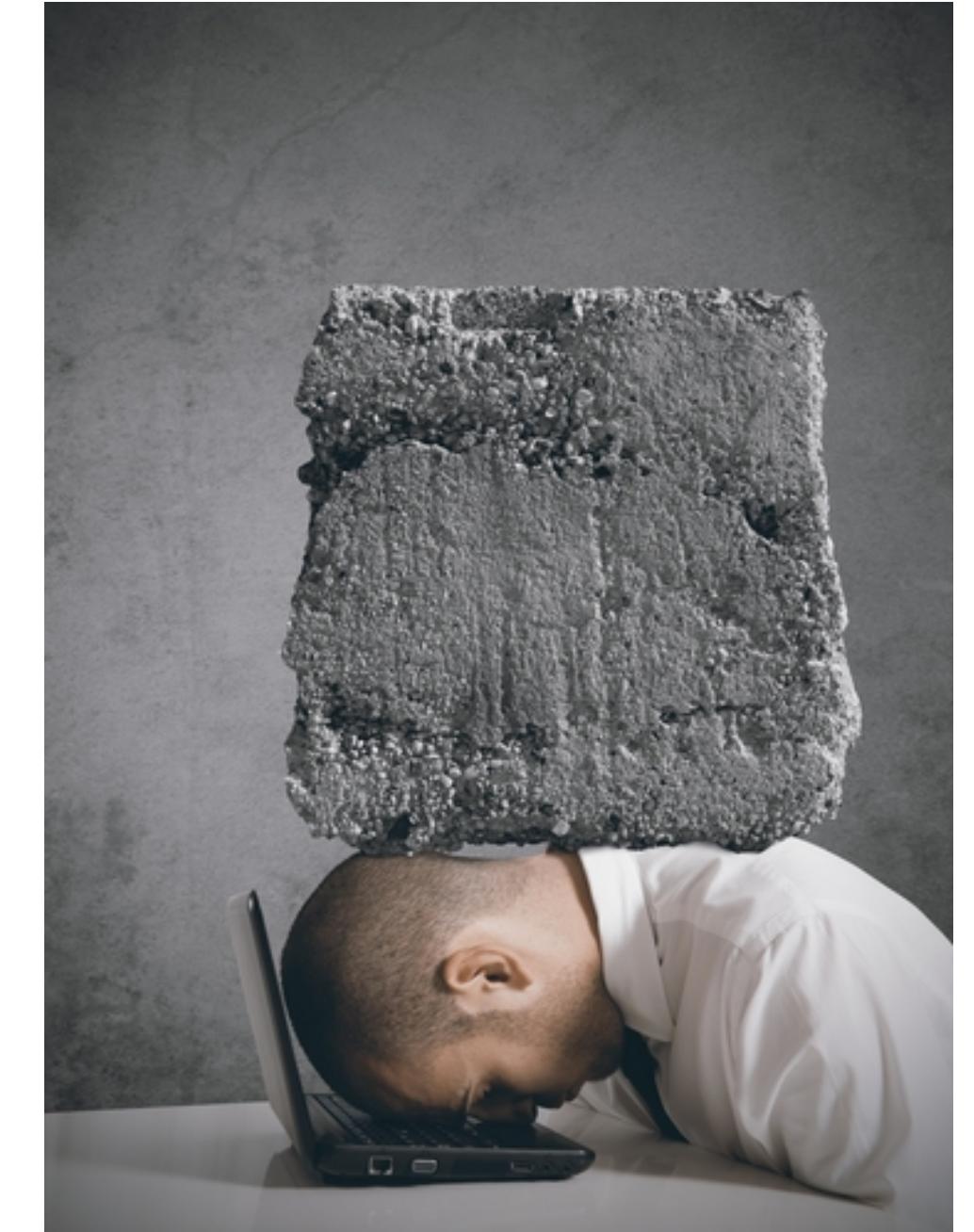
Find Research Topics

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- What is a good idea?
 - Big is good? And what is big?
 - Hot area?
 - Is interesting good enough?
 - Practical? Theoretical? Futuristic? Riskier?

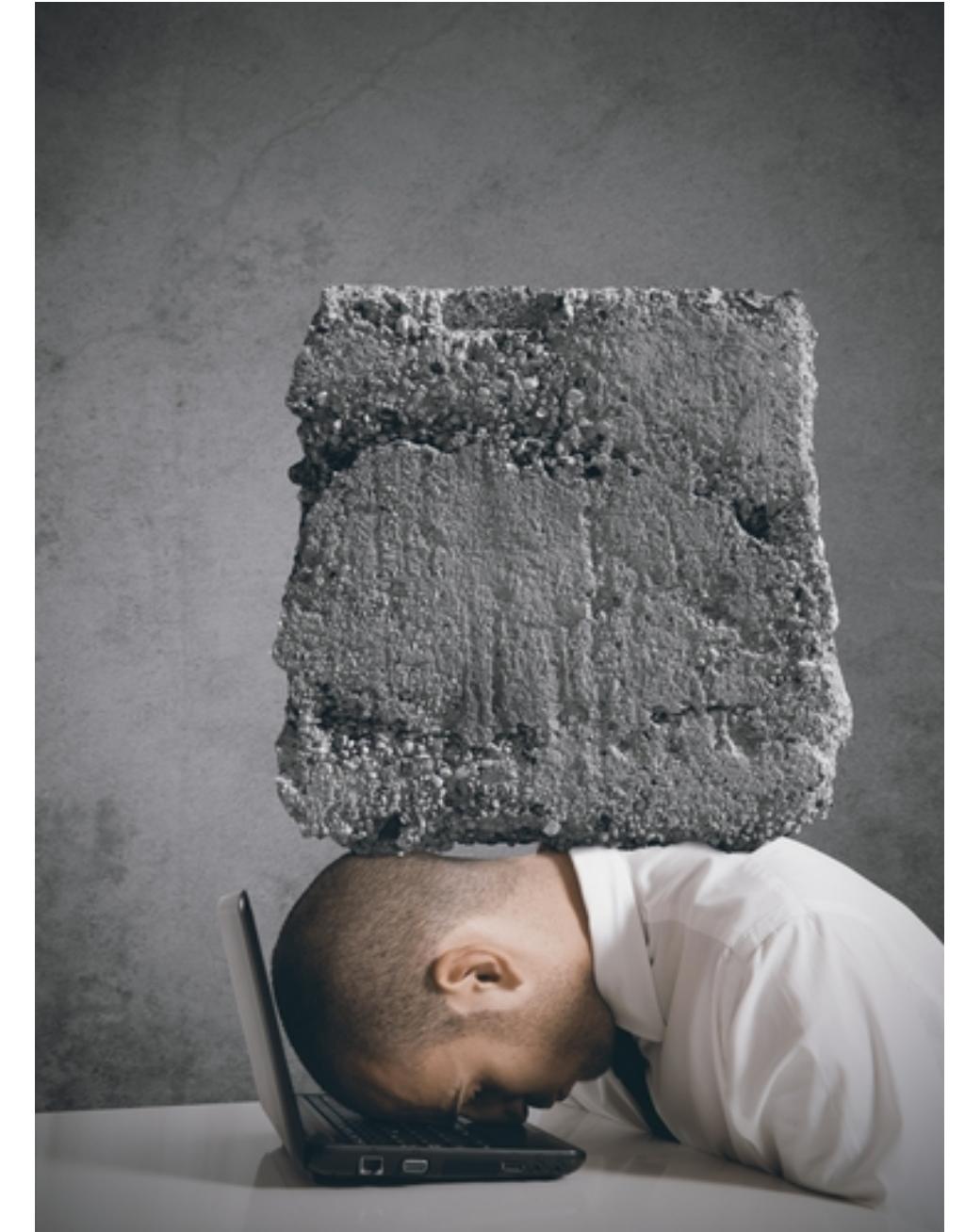
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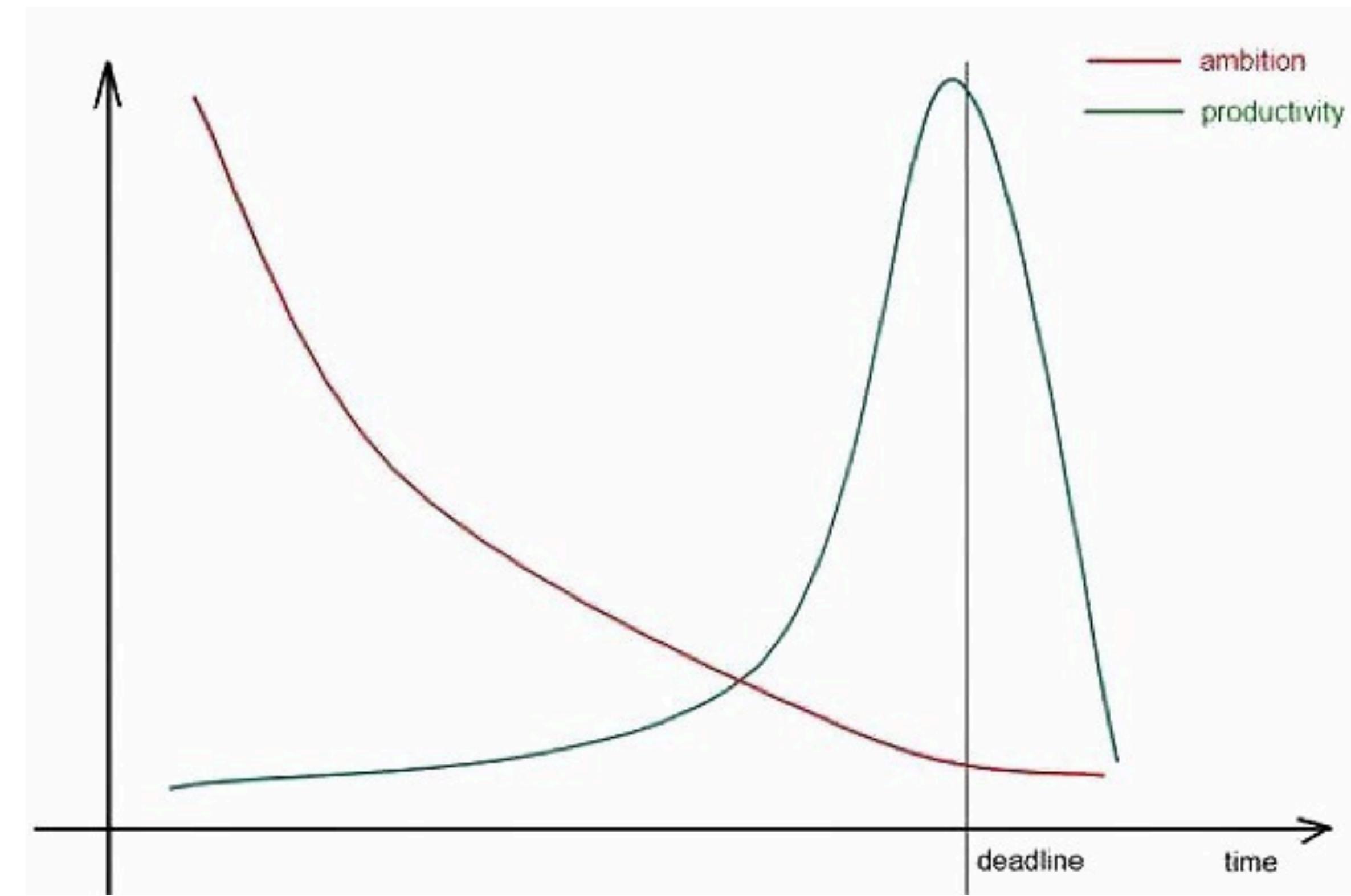
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 - Big is good? And what is big?
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 - Practical? Theoretical? Futuristic? Riskier?
- Talk to industry and find/discover real problems
- Make longer plans, be flexible/versatile but don't go too broad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



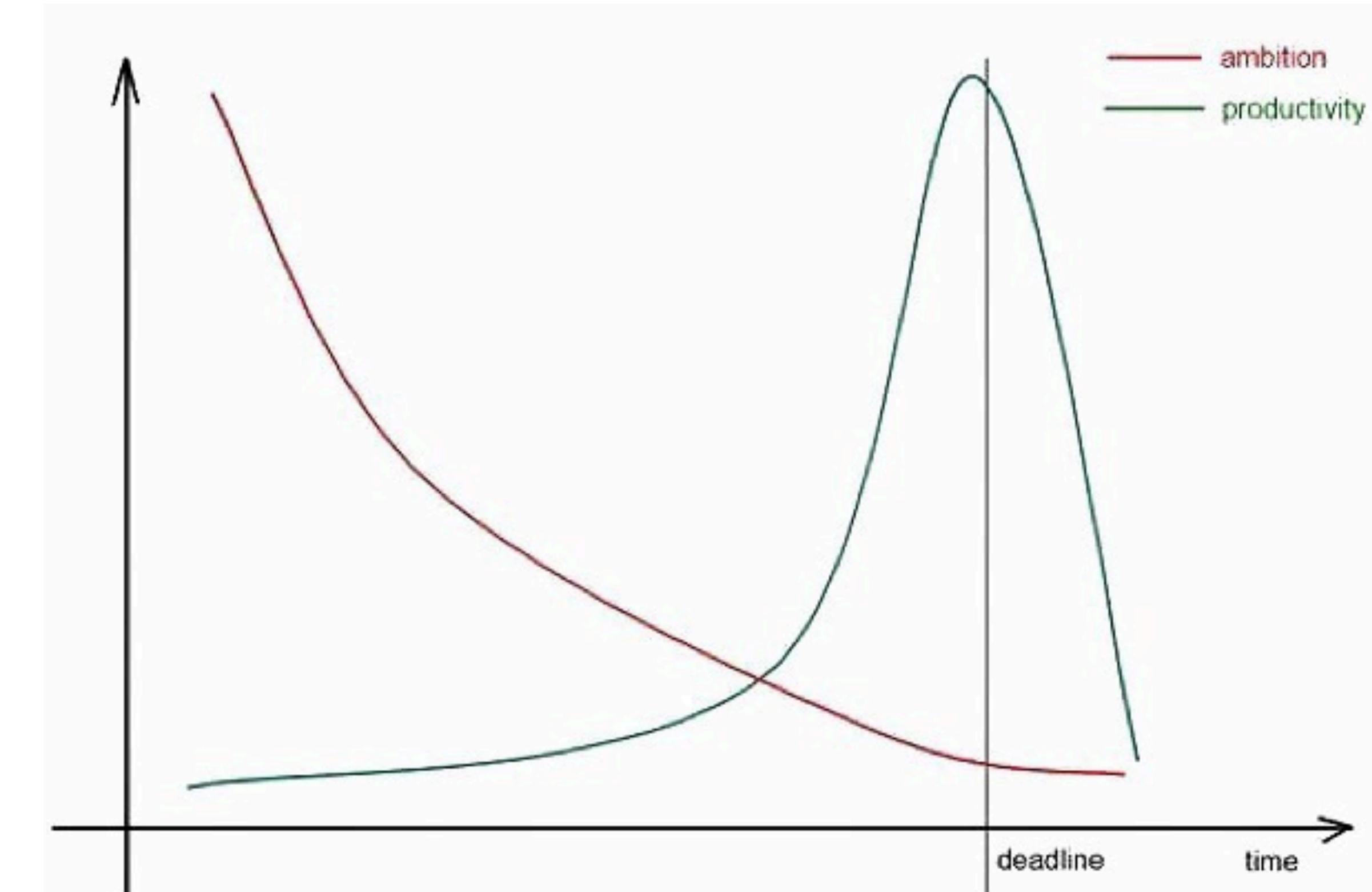
Manage Projects

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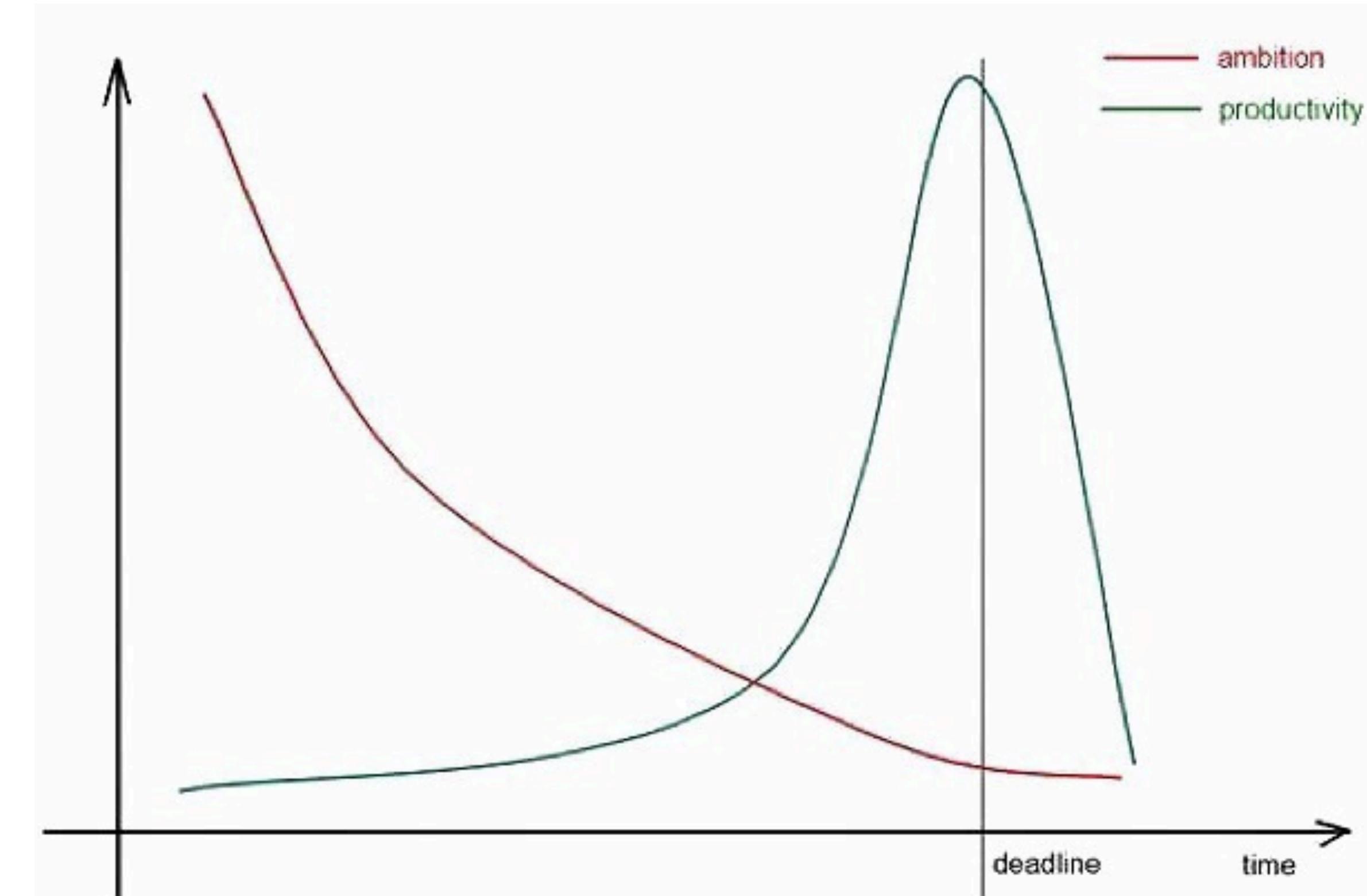
Manage Projects

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



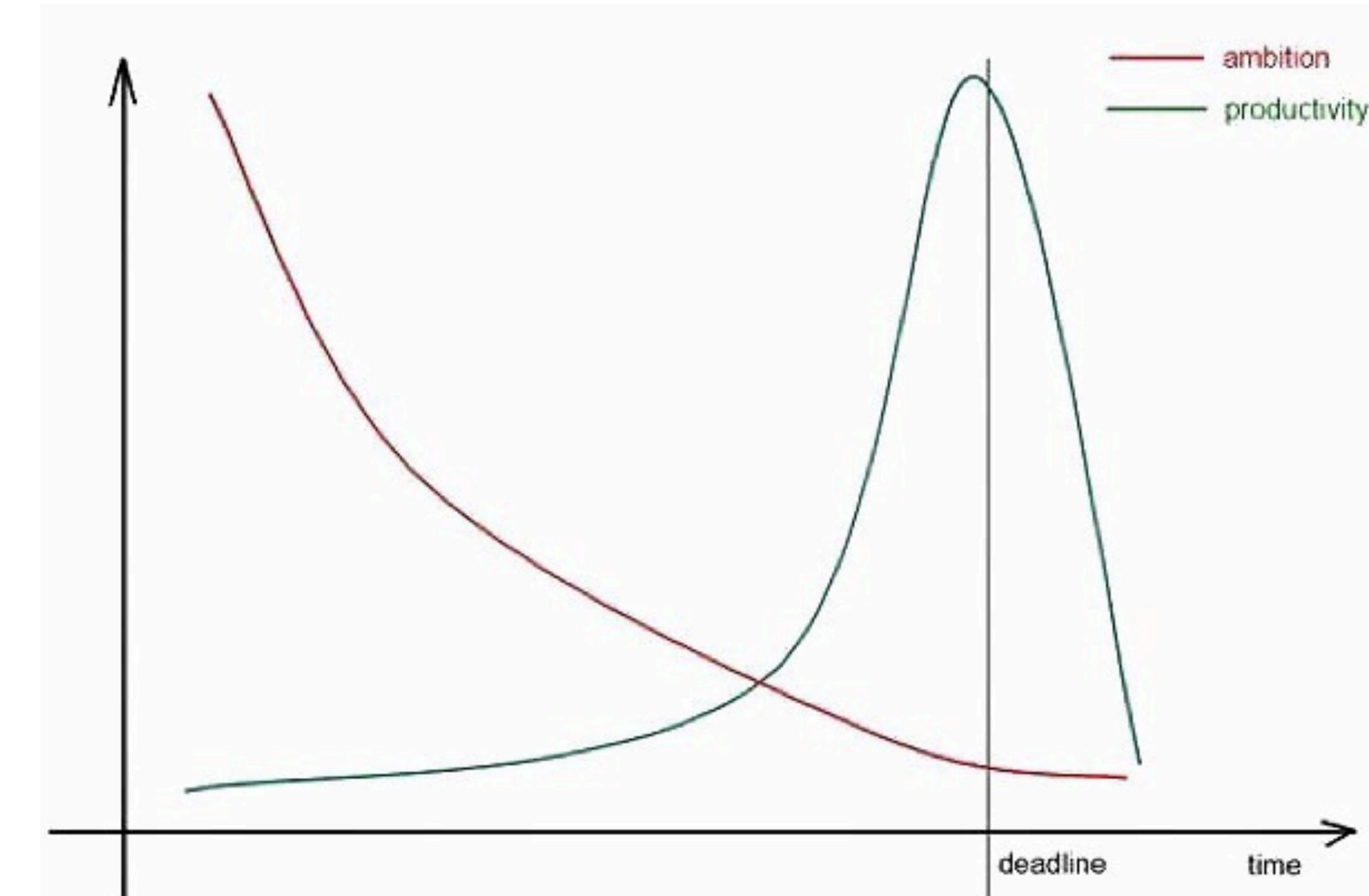
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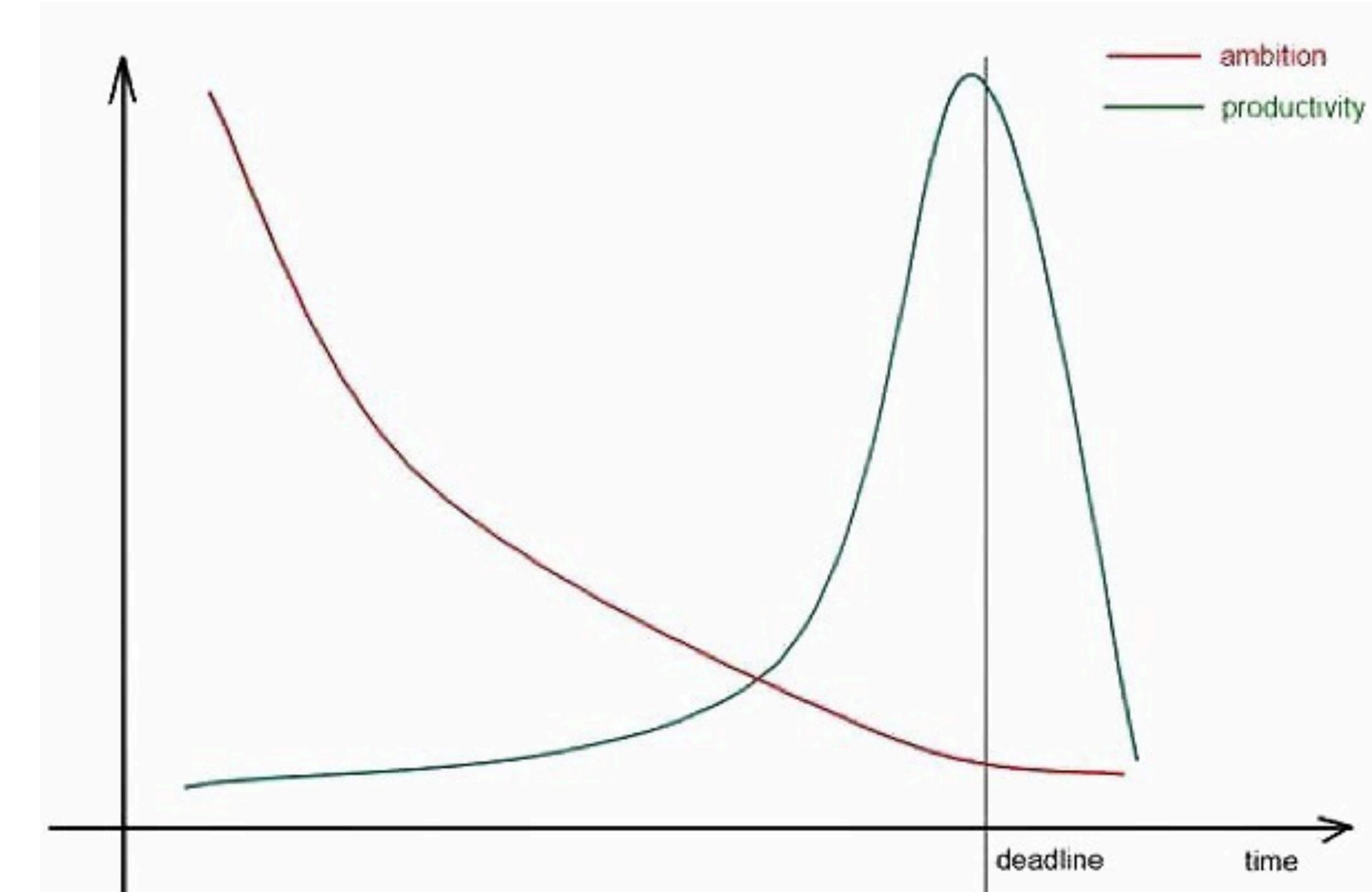
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Manage Projects

- 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

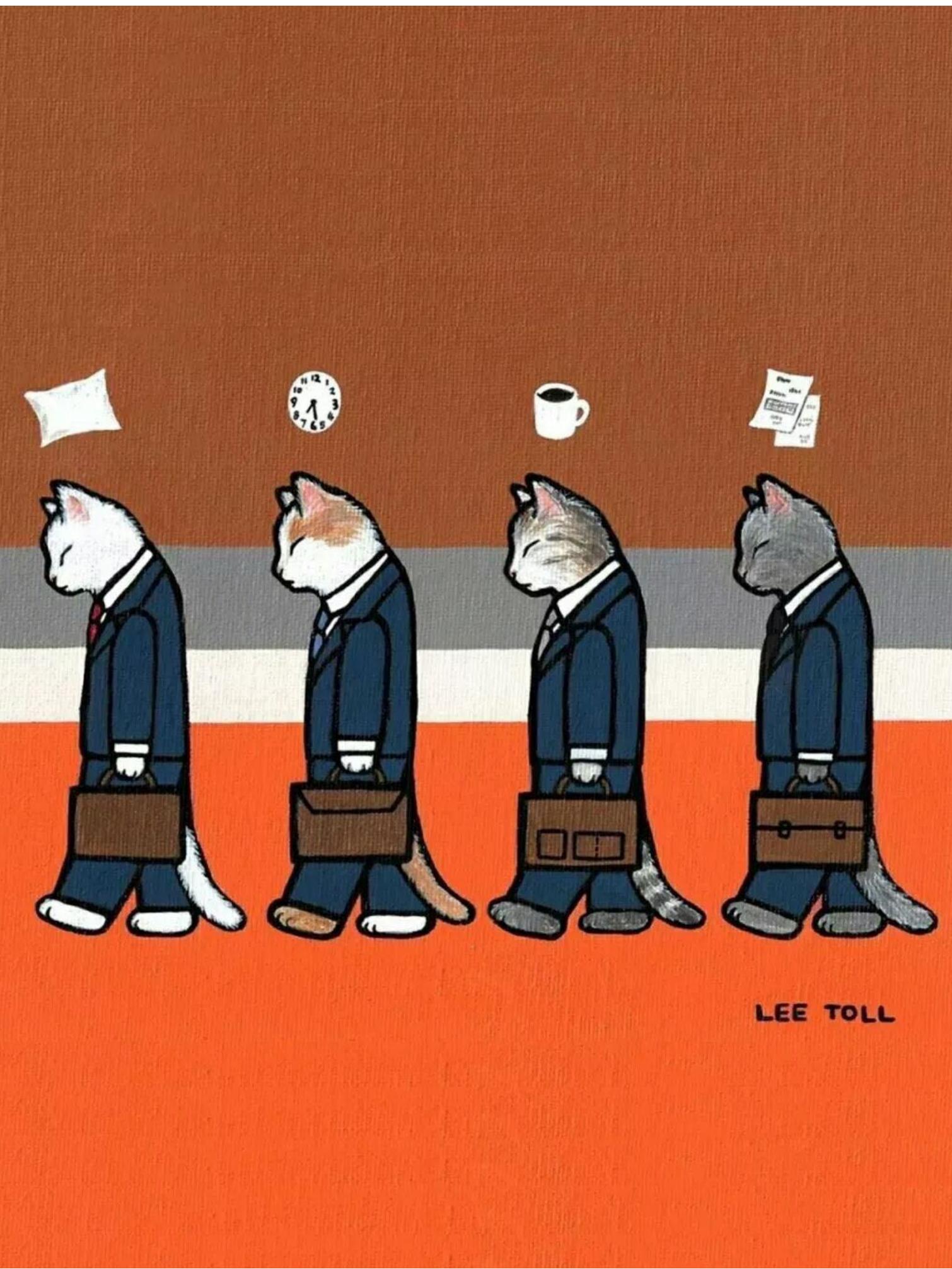
- Fundamental values of academic integrity (from ICAI)
 - Honesty, trust, fairness, respect, responsibility, and courage
- You'll see the dark side. Don't let it affect you!
- Talk to trusted senior members, believe in the good
- Help improve the system and our community

hope



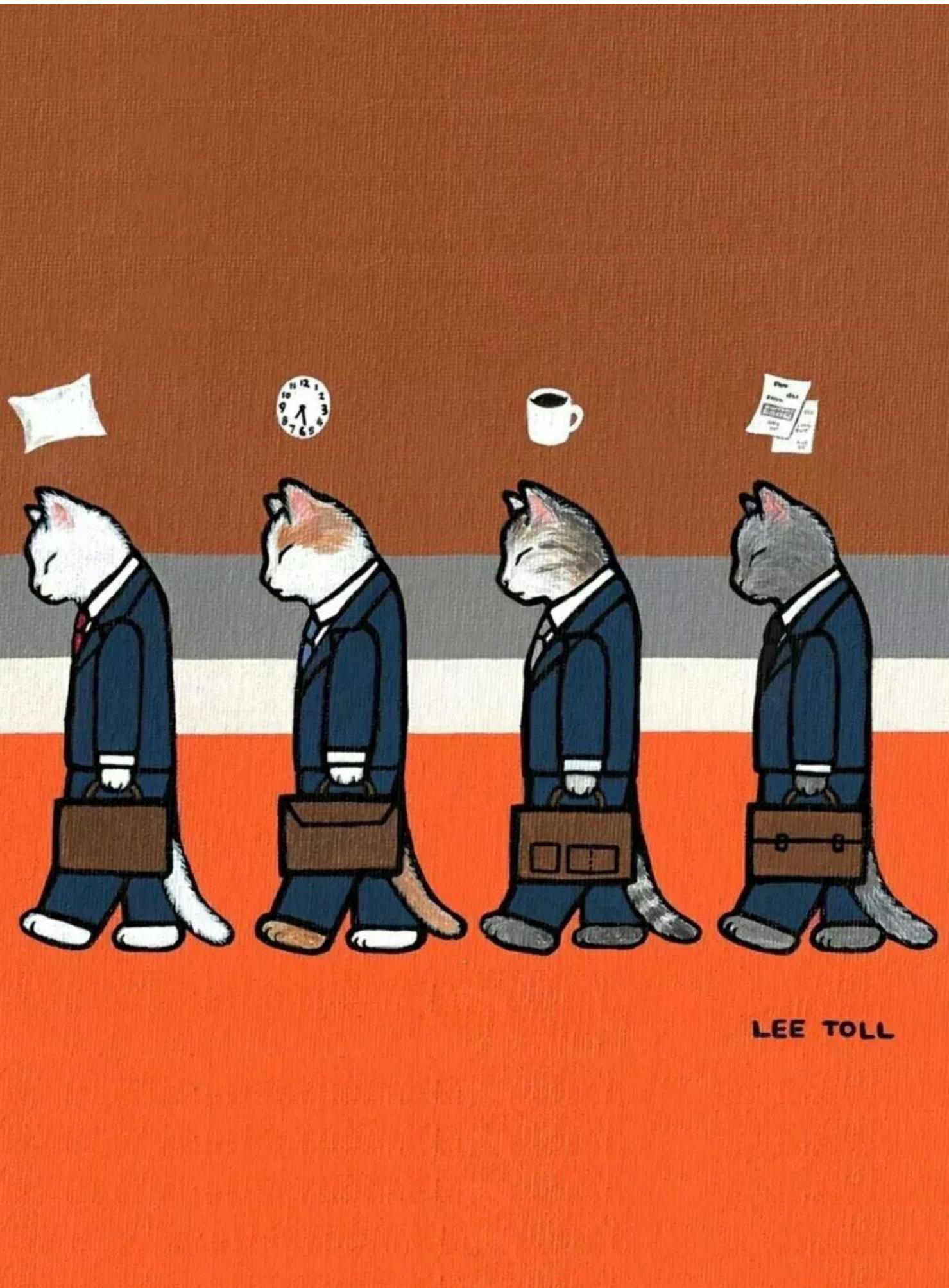
My Midlife Crisis and How I Deal with It

My Midlife Crisis:



My Midlife Crisis:

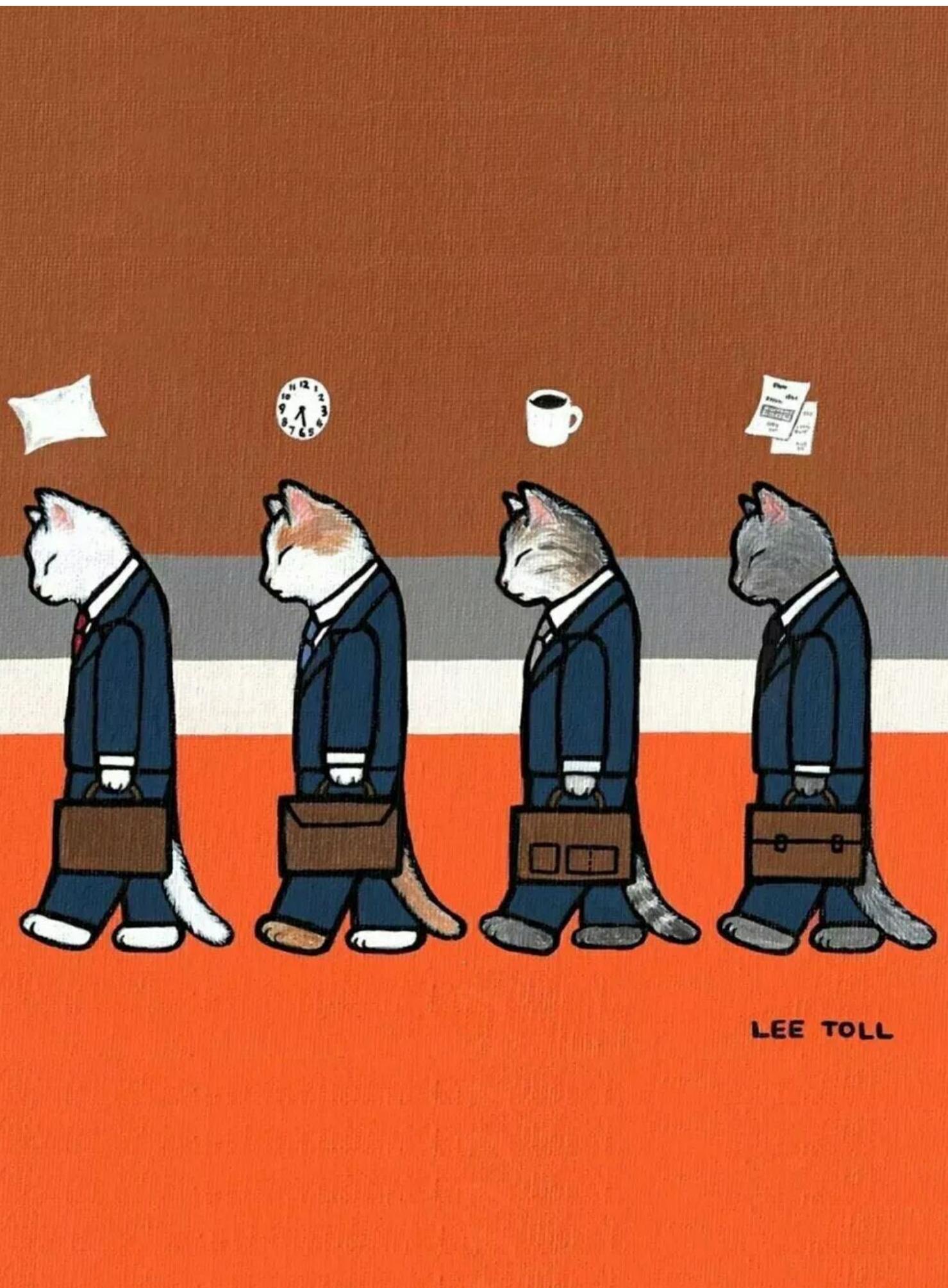
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- Is any of these meaningful?
- What's the meaning of my life?



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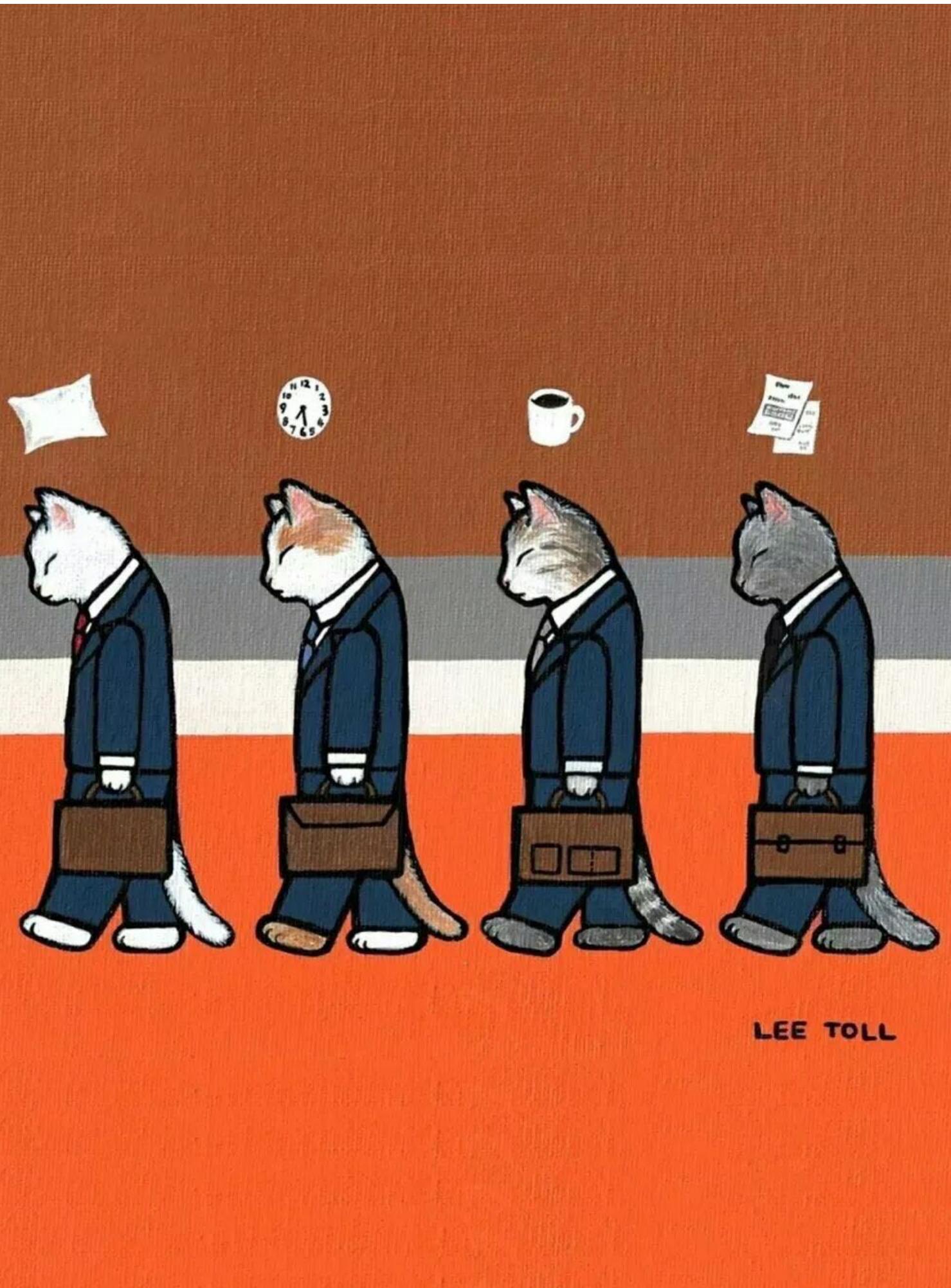


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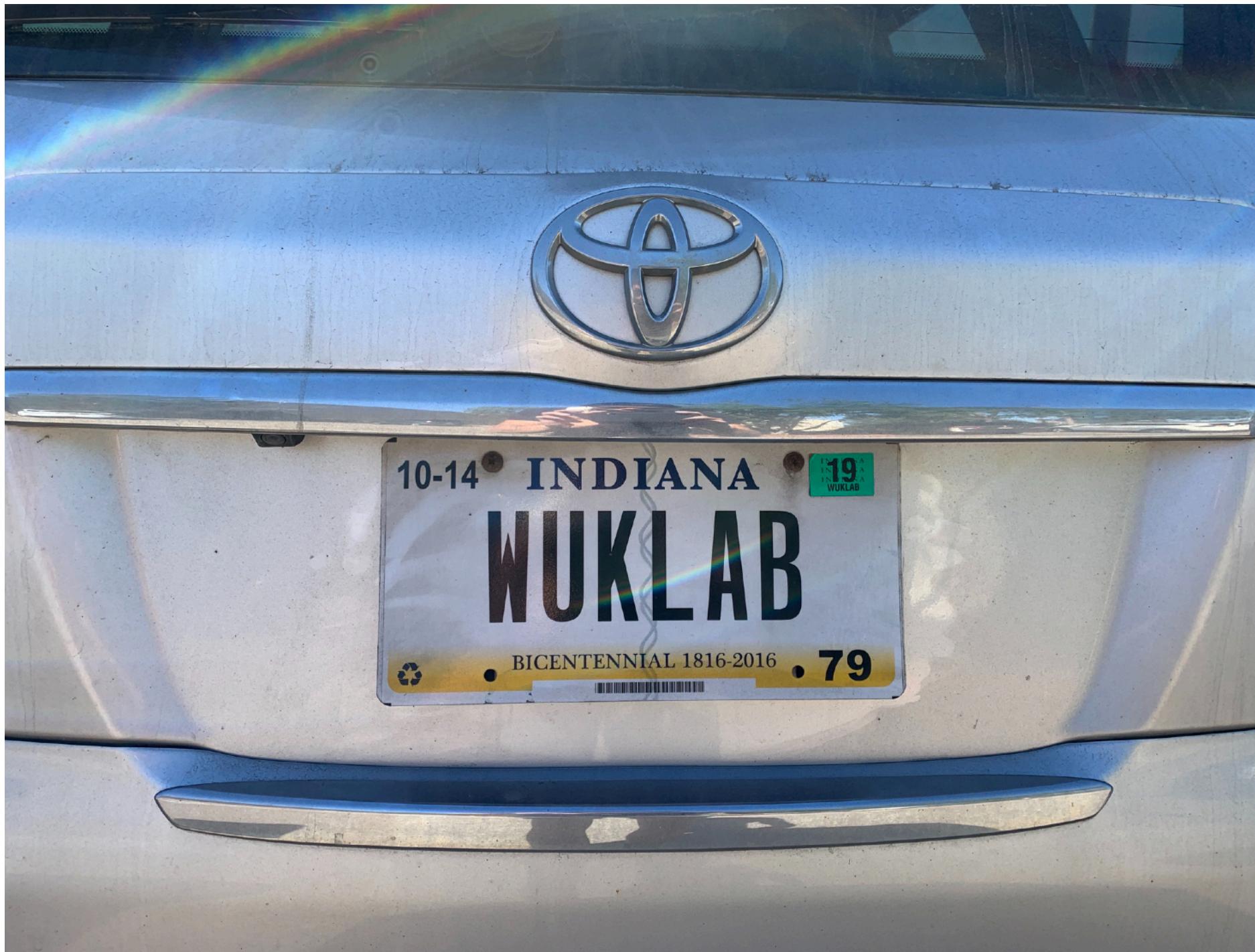
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Focus on now and the fun, i.e., think less



Rewards from Students

Rewards from Students



Rewards from Students



shinyehtsai 7:31 PM

Ohhhhh 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

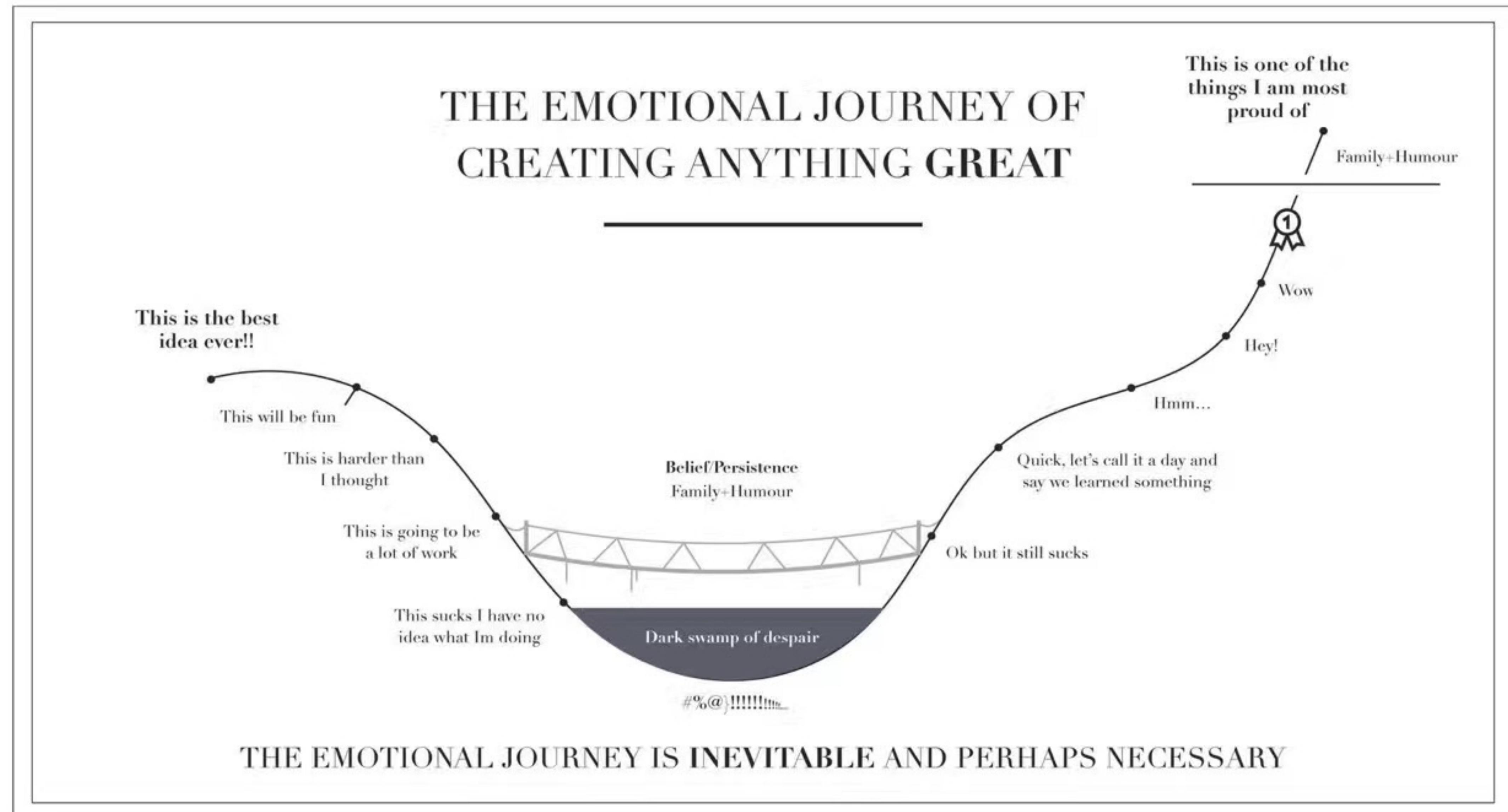
I would definitely have a smile on my face
tonight when I sleep.



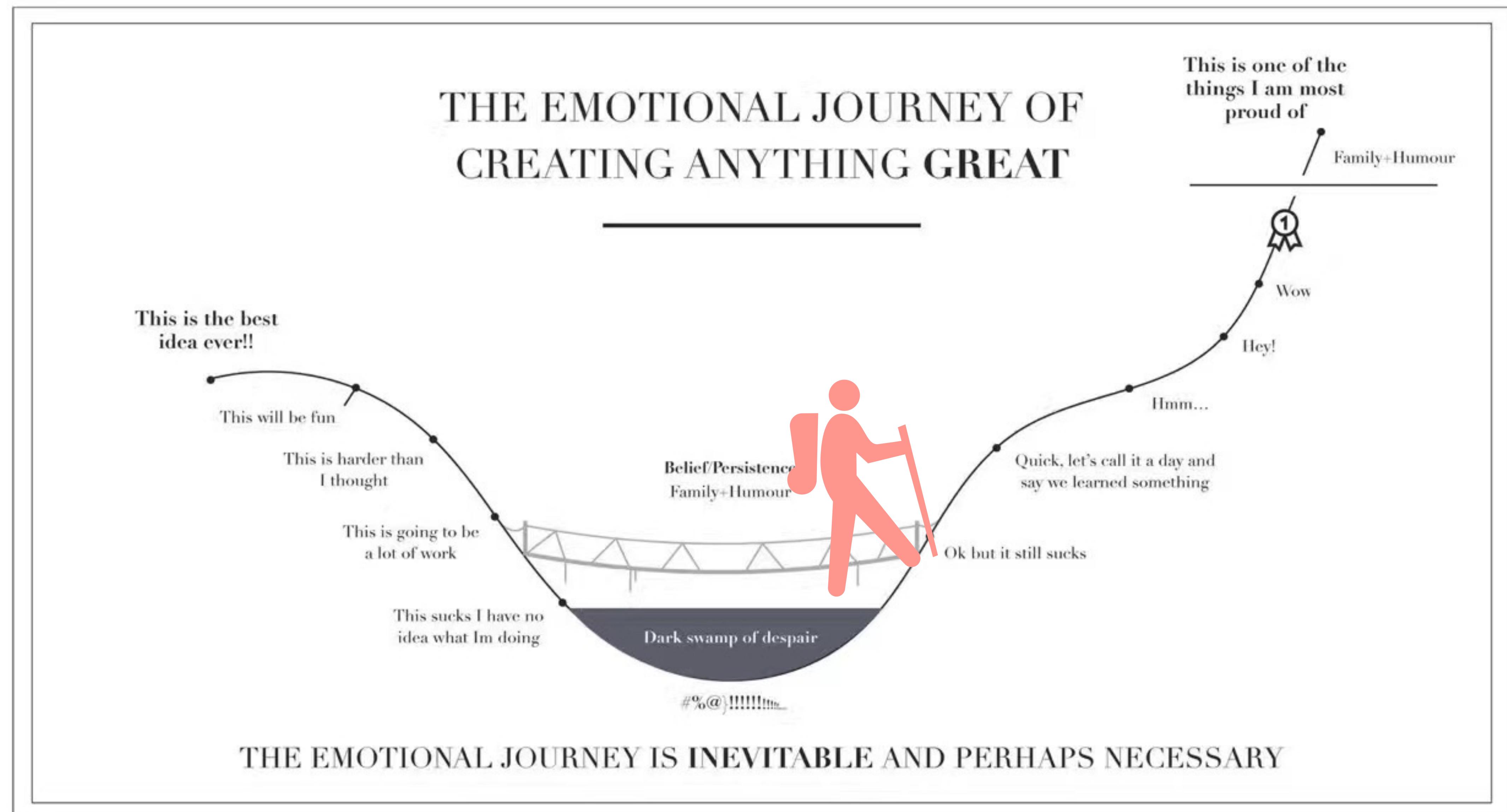
yiying 7:44 PM

haha

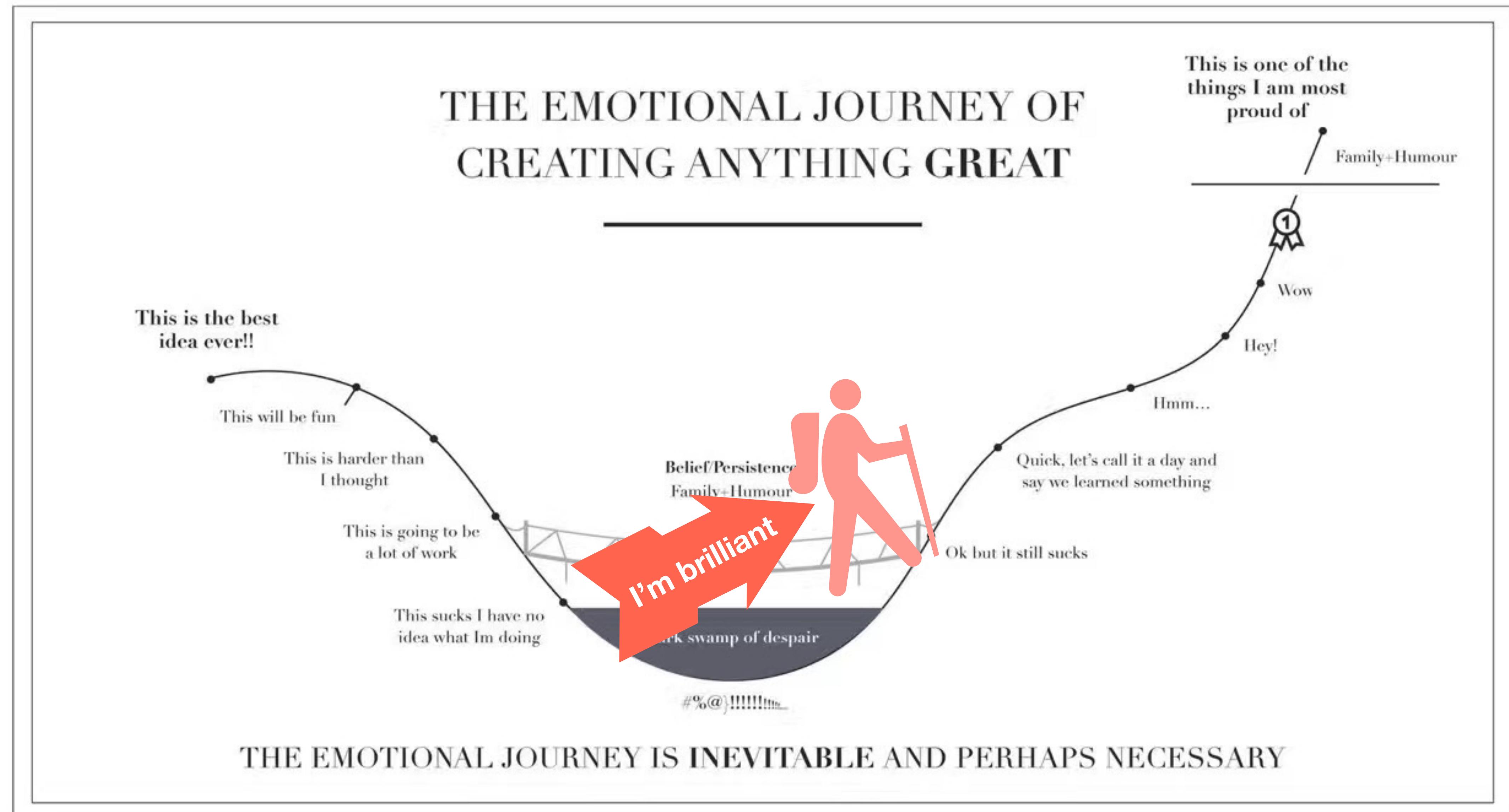
Excessive reserves of self-confidence



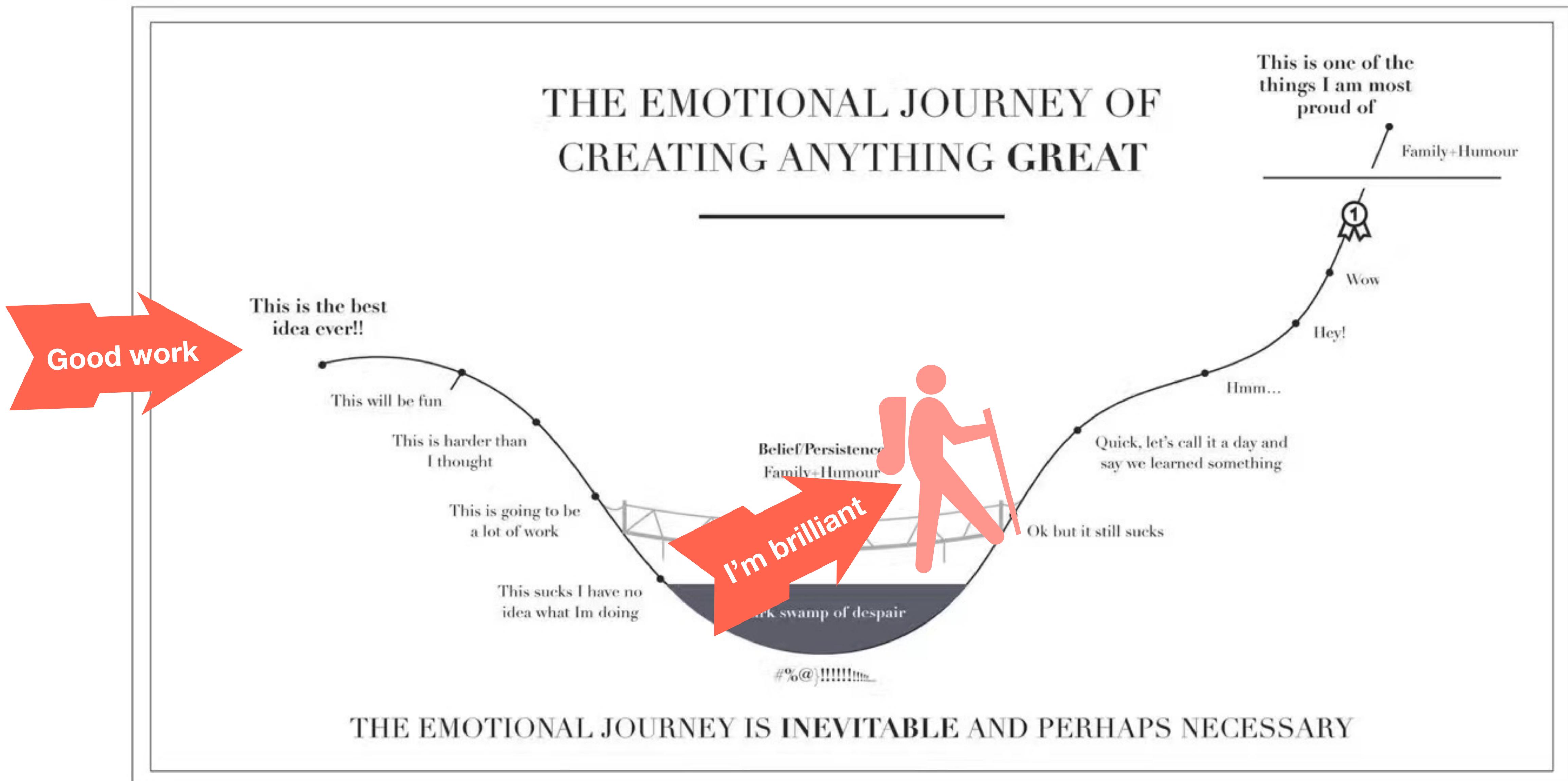
Excessive reserves of self-confidence



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.

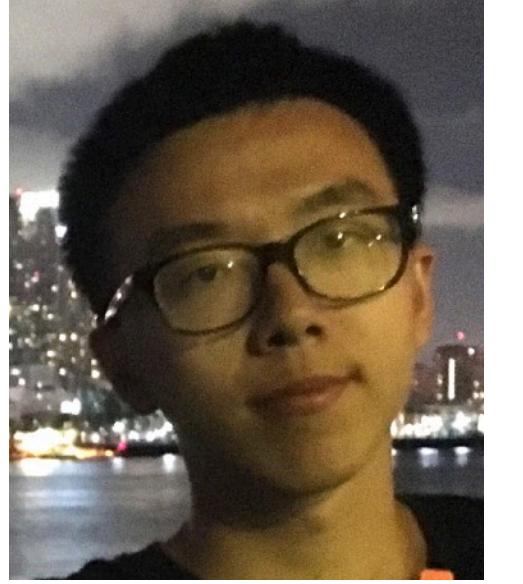
Source: <http://www.theexclusive.org/2018/09/impostor.html>

Research in Academia: Best job in the world?

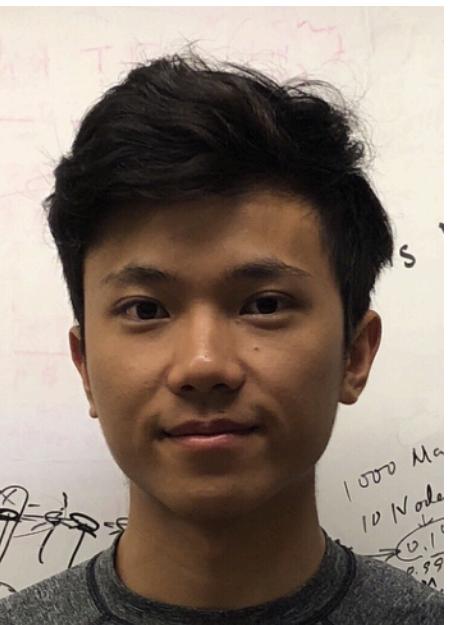
It is the best job in the world for me!

Not the best job for everyone

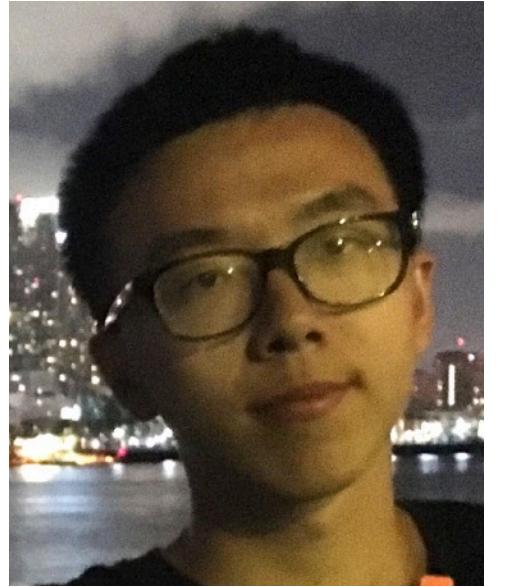
Current students



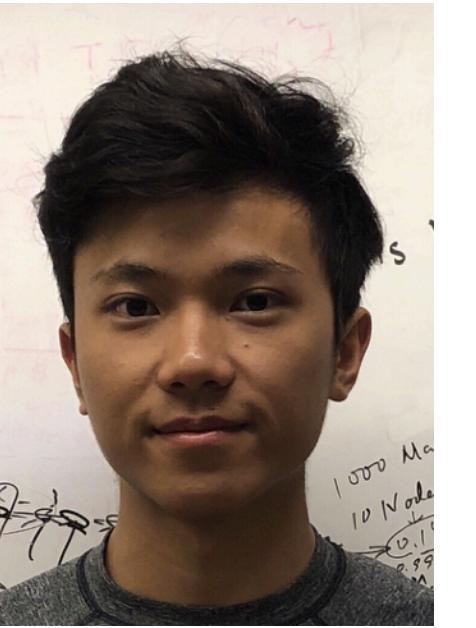
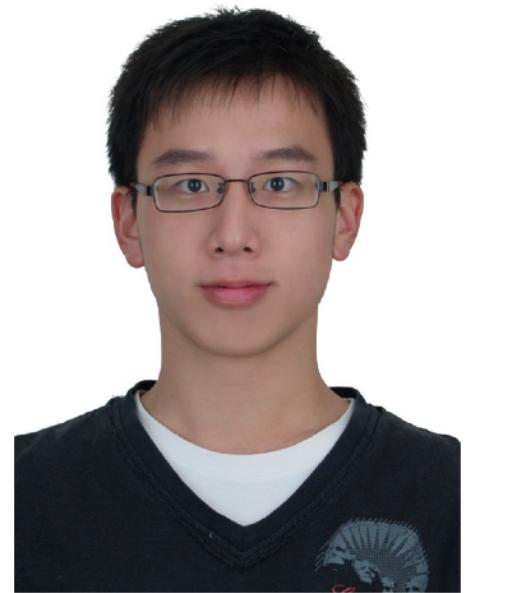
Alumni



Current students



Alumni





Thank you! Questions?

@WukLab.io

