



Ismini Lourentzou

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Computer Science, Virginia Tech

<https://isminoula.github.io>

twitter.com/ismini_L

Thank you
for joining!





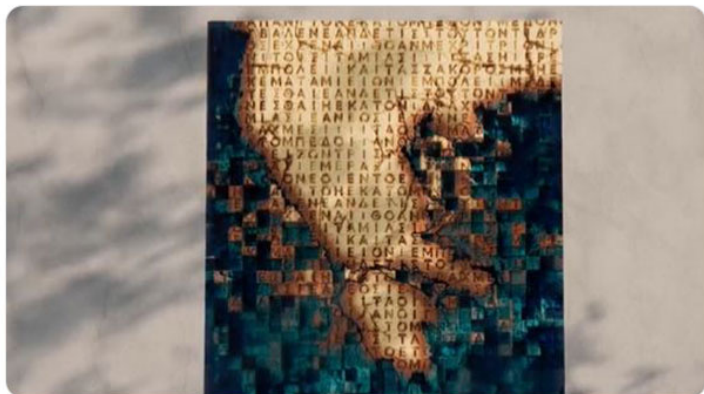
DeepMind

@DeepMind



Introducing Ithaca, the first deep neural network for textual restoration, as well as geographical and chronological attribution of ancient Greek inscriptions.

Out today in [@nature](#), Ithaca aims to assist historians & better understand ancient history: dpmd.ai/lthaca-blog 1/

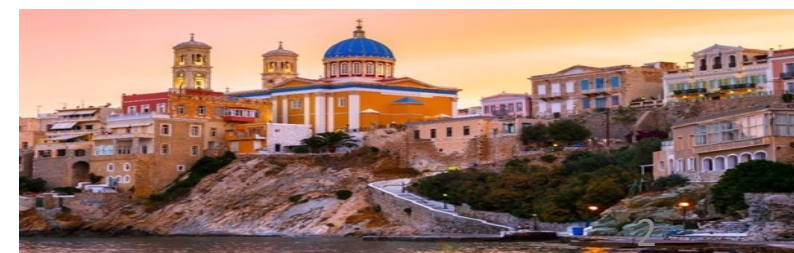


4:24 PM · Mar 9, 2022



[Read the full conversation on Twitter](#)

1.2K



Bachelors in Business Administration



Computer Science

TIMAN



3

My career path



IBM Research Almaden, San Jose CA



Research Focus

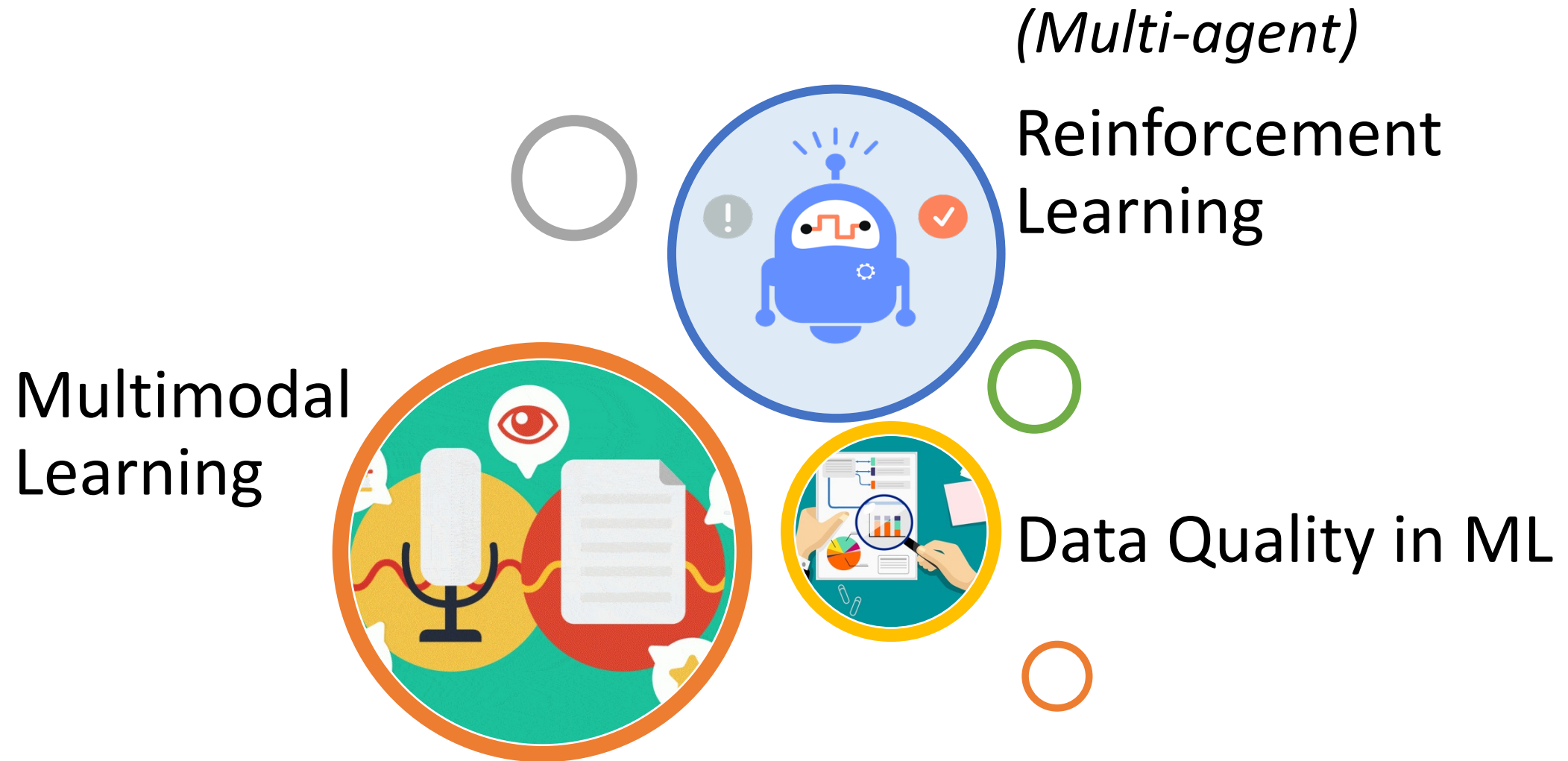


How can we build intelligent systems that **perceive the word** similar to as humans do?



How can we utilize these intelligent systems to assist us and to **augment human intelligence**?

Research Directions



Multimodal Machine Learning (Vision + Language)

- Video Language Grounding
- Video Generation
- ...



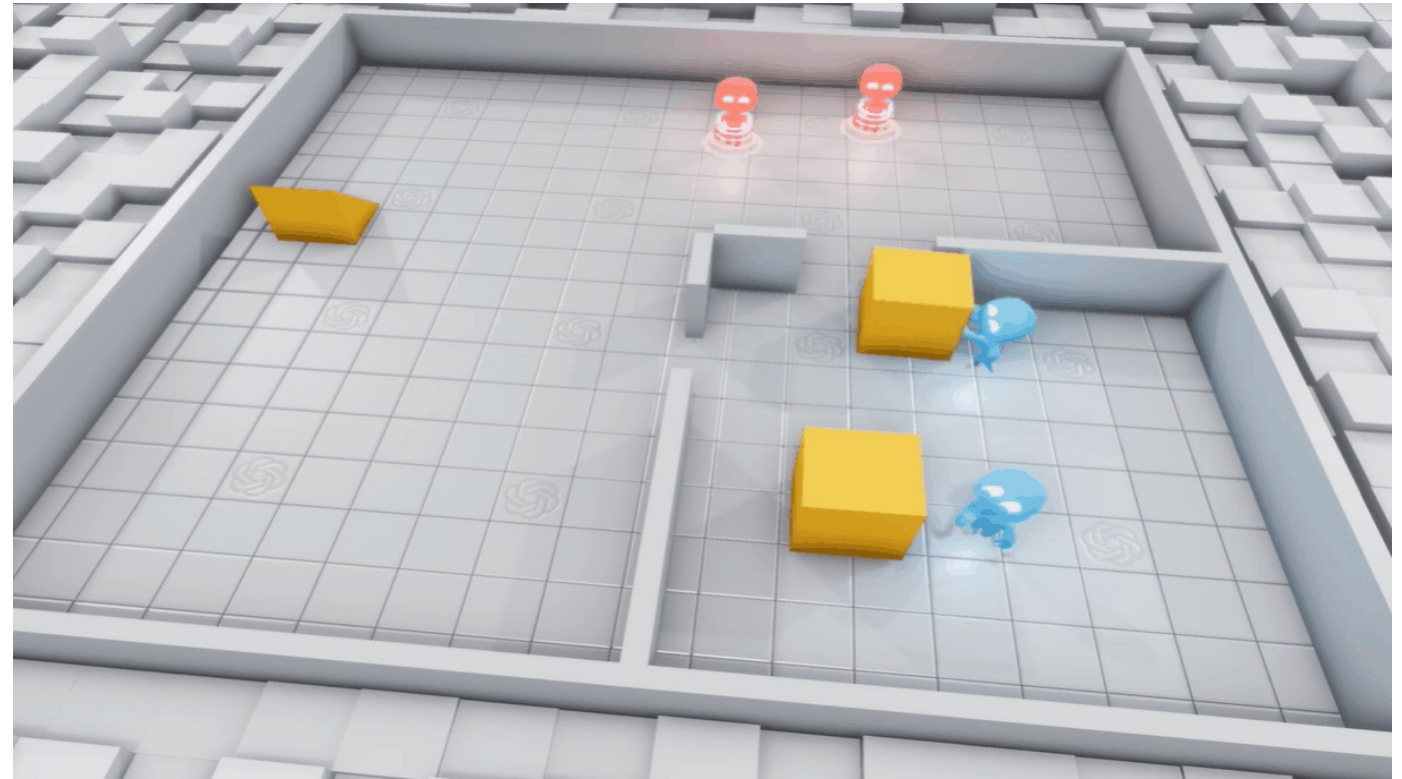
Source: EPIC KITCHENS Dataset

<https://epic-kitchens.github.io/2021>

Damen, Dima, Hazel Doughty, Giovanni Maria Farinella, Sanja Fidler, Antonino Furnari, Evangelos Kazakos, Davide Moltisanti et al. "Scaling egocentric vision: The epic-kitchens dataset." In *Proceedings of the European Conference on Computer Vision (ECCV) 2018*.

(Multi-agent) Reinforcement Learning

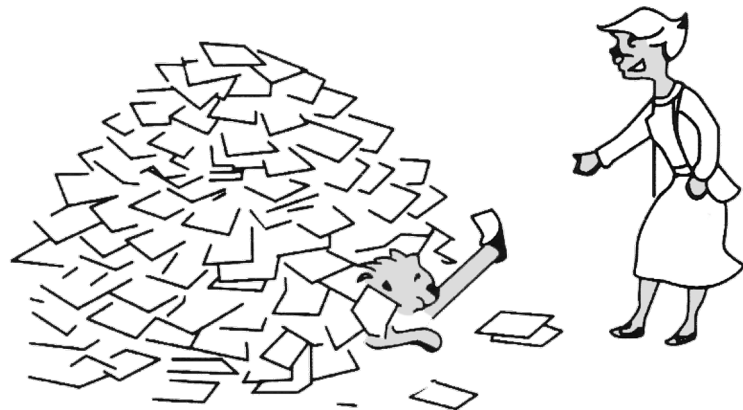
- Emergent Behavior & Communication
- Coordination
- Embodied AI
- Healthcare Applications
- ...



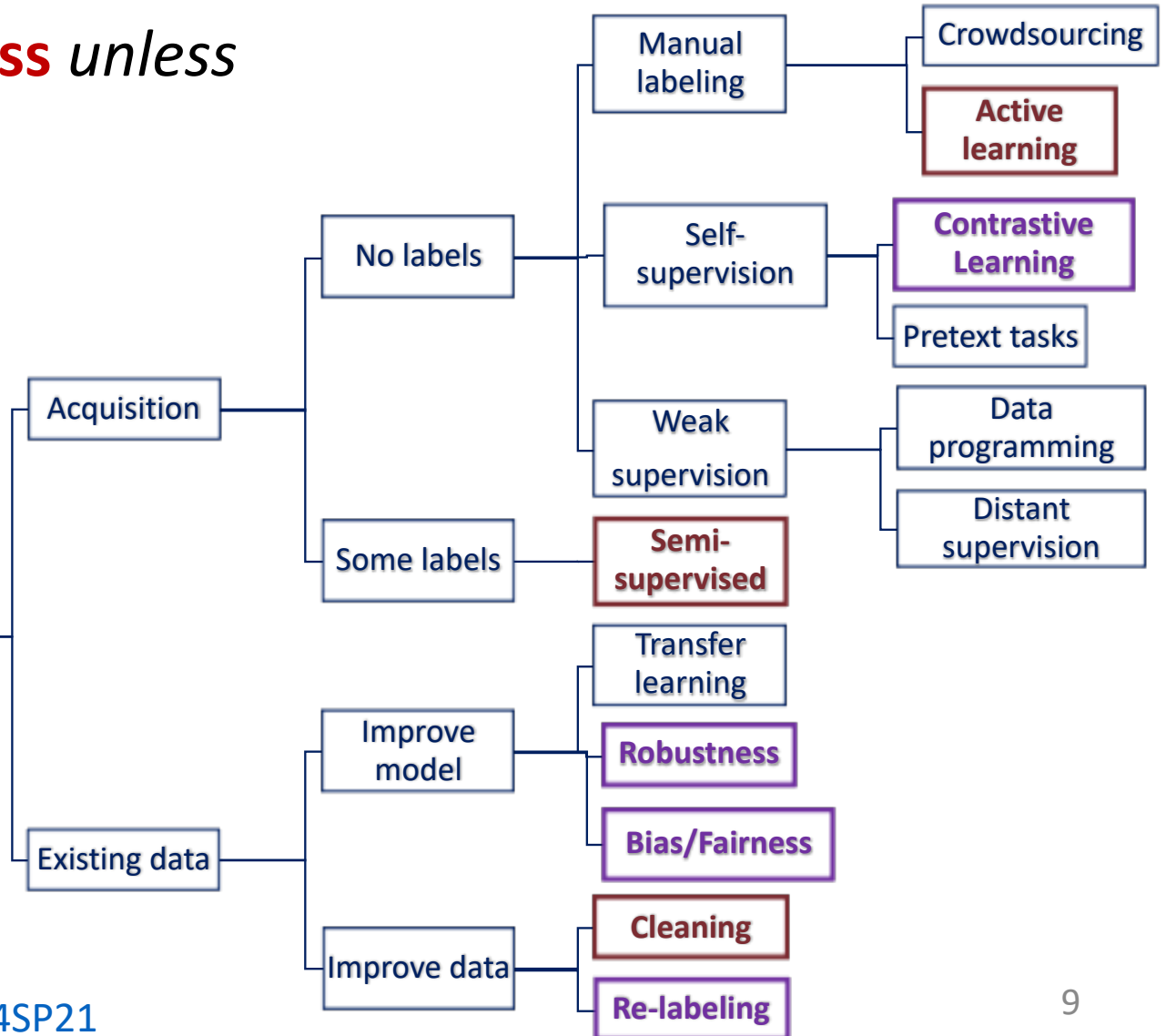
Source: <https://openai.com/blog/emergent-tool-use/>

Data Quality in ML

Information **hidden in data** is **useless** *unless* it can be **discovered** and consumed

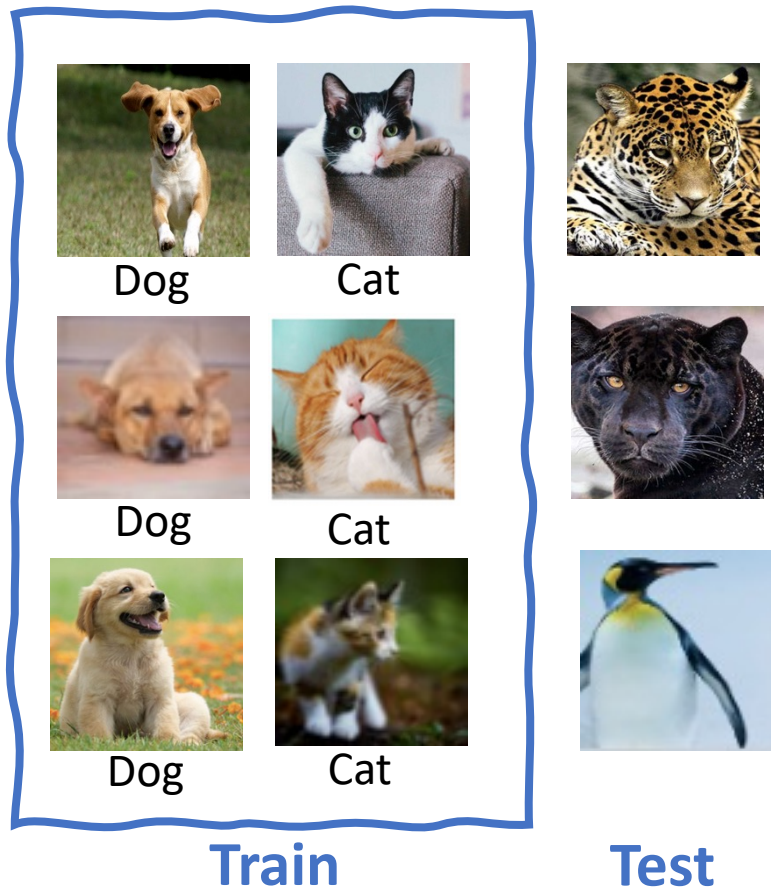


ML for Data

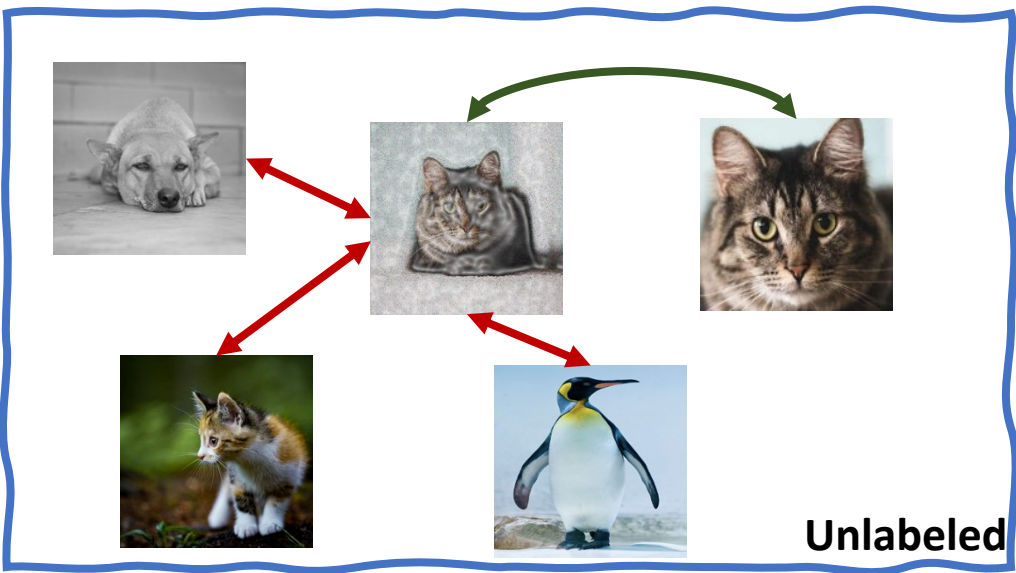


Machine Learning

Zero-shot Learning



Self-supervision



Open-Set Semi-supervised Learning



ML4Healthcare

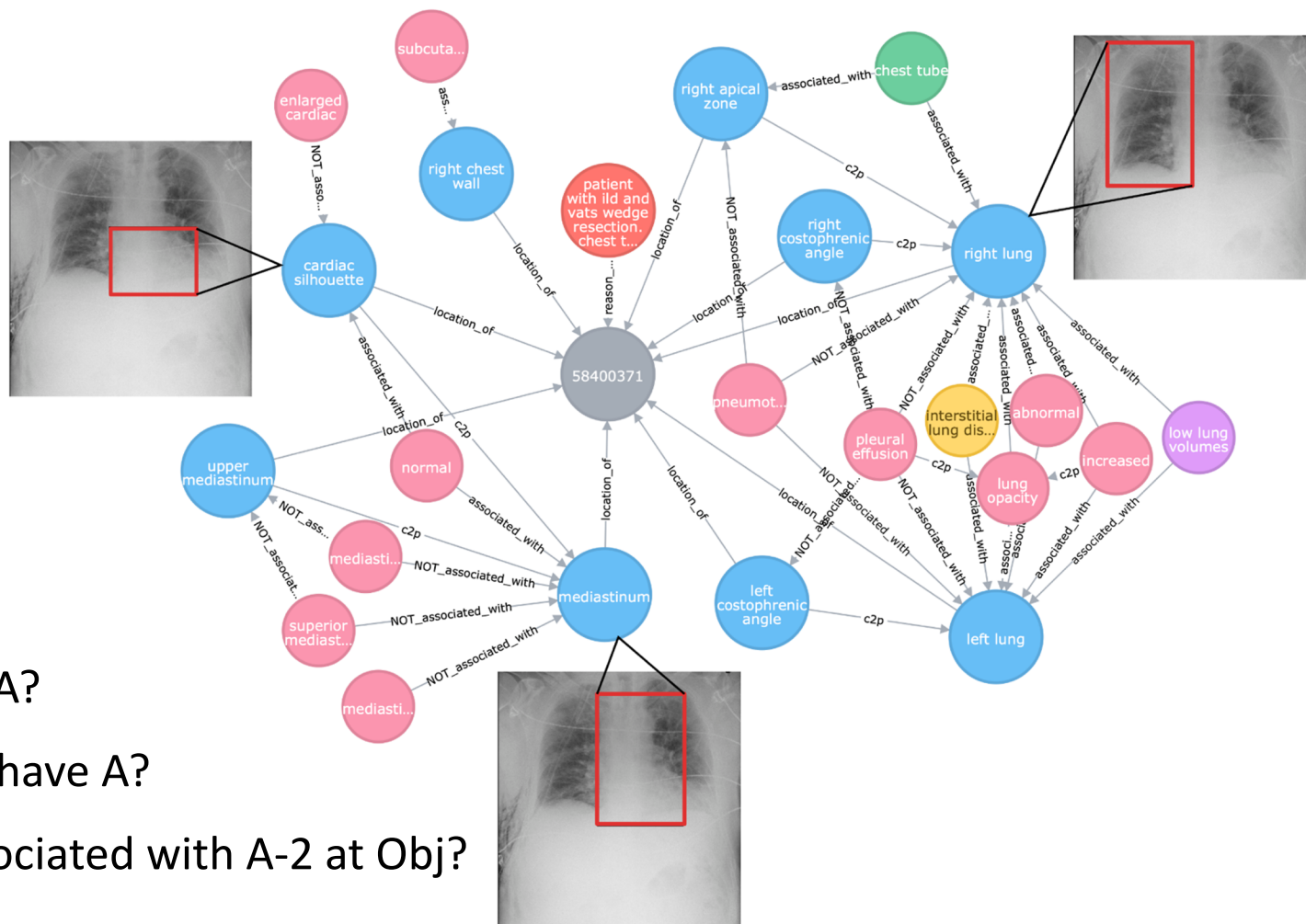
Chest ImaGenome

Longitudinal Scene Graph Dataset that simplifies **anatomically aware clinical reasoning**:

- **242,072** graphs
- 29 object types
- 76 attribute types
- 4.9M relations

Clinical Q's:

- ↳ Where is A?
- ↳ Does Obj have A?
- ↳ Is A-1 associated with A-2 at Obj?



The beauty of STEM research

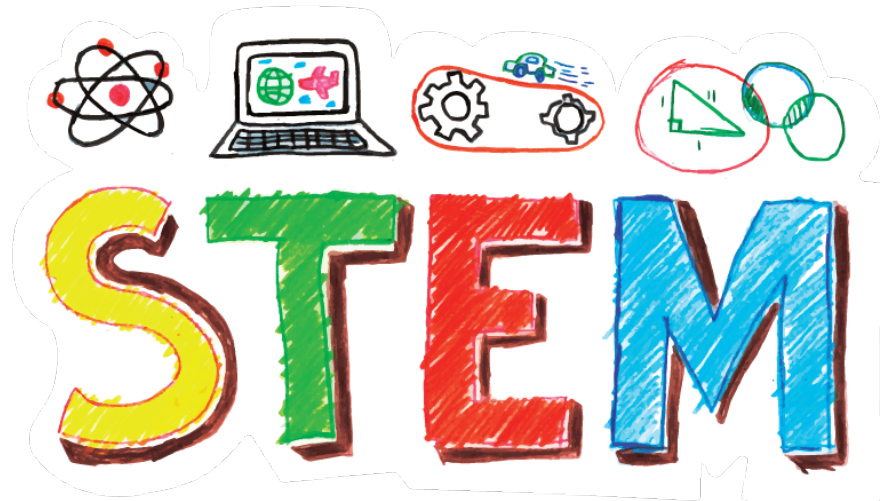
Rewarding

Creative

Working with collaborators all over the world

Impact and value to society

New things to do every day (never get bored)

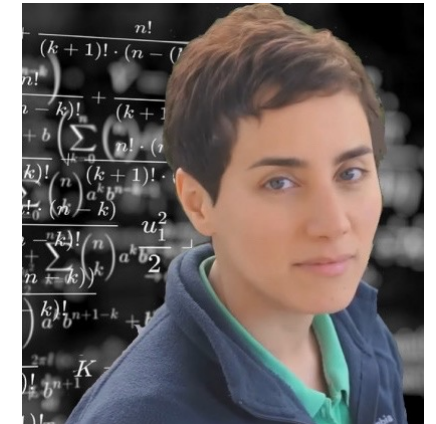


Grace Hopper, computer scientist.
Invented the first compiler.



Mae Carol Jemison, NASA astronaut and engineer.
First black woman to travel into space

Maryam Mirzakhani, mathematician.
Fields Medal for her work on
geometry of Riemann surfaces.



The beauty of Women in STEM

Inventors

Teachers

Pioneers

Leaders

“Outstanding women can function as inspirational examples of success, illustrating the kinds of achievements that are possible for women around them. They demonstrate that it is possible to overcome traditional gender barriers, indicating to other women that high levels of success are indeed attainable.”

-Penelope Lockwood, Psychologist

Challenges for Women in STEM

<https://nces.nsf.gov/pubs/nsf21321/report/field-of-degree-women>



Women, Minorities, and Persons with Disabilities in Science and Engineering

Report Data Tables Technical Notes Additional Resources Downloads Contact Us How Do I?

Report

About this report

Executive summary

Introduction

Enrollment

Field of degree: Women

Overview

Social sciences

Computer sciences

Engineering

Mathematics and statistics

Earth and physical sciences

Field of degree: Minorities

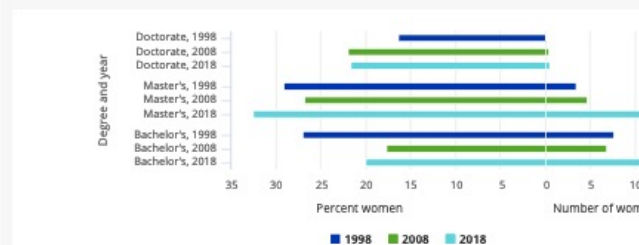
Field of degree: Intersectionality

Computer sciences

Computer sciences has one of the lowest shares of female degree recipients among the broad fields of S&E, despite an increase in the number of women receiving computer sciences degrees over the past 2 decades—the number of women with bachelor's and doctoral degrees more than doubled, and the number with master's degrees more than quadrupled. Although the share of women receiving master's and doctoral degrees increased, the share receiving bachelor's degrees declined, from 27.0% in 1998 to 19.9% in 2018. The academic pipeline for women earning advanced degrees in computer sciences may be affected, to the extent that graduate enrollment will be affected by a smaller proportion of women receiving a bachelor's in computer sciences (figure 10).

Figure 10

Degrees awarded to women: Computer sciences, 1998, 2008, 2018



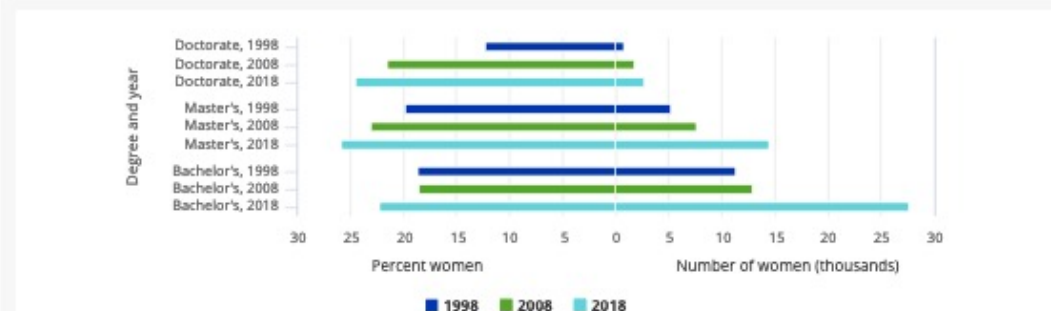
Data View

Engineering

Engineering is another S&E field with one of the lowest shares of female degree recipients. However, both the number and share of women receiving engineering degrees increased at all levels over the past 2 decades. The number of women receiving engineering doctoral degrees is small, about 2,700 in 2018, yet the share of degrees earned by women in this field doubled, from 12.3% to 24.5% since 1998 (figure 11).

Figure 11

Degrees awarded to women: Engineering, 1998, 2008, 2018

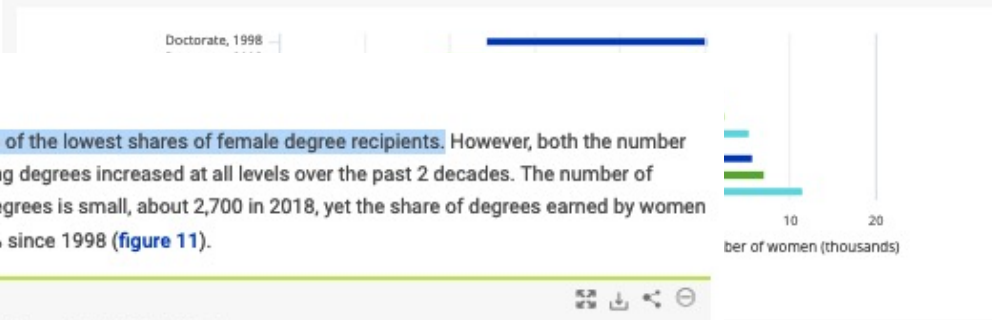


Mathematics and statistics

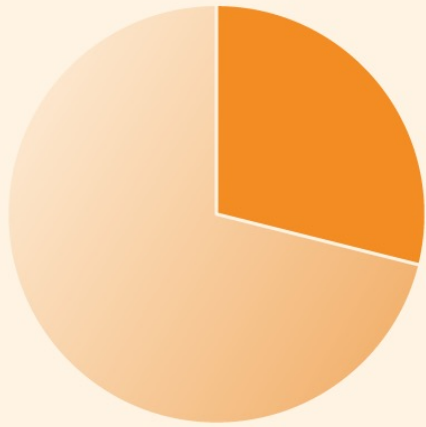
Women earned less than half of mathematics and statistics degrees: their share was over 40% at both the bachelor's and master's levels but under 30% at the doctoral level. Over the past 2 decades, the share of women receiving bachelor's degrees in mathematics and statistics declined and the share of women receiving master's degrees was stagnant. At the doctoral level, women's share increased between 1998 and 2008, from 25.7% to 31.1%. The share then declined to 28.0% in 2018, even though there was an increase in the number of women receiving doctoral degrees (figure 12).

Figure 12

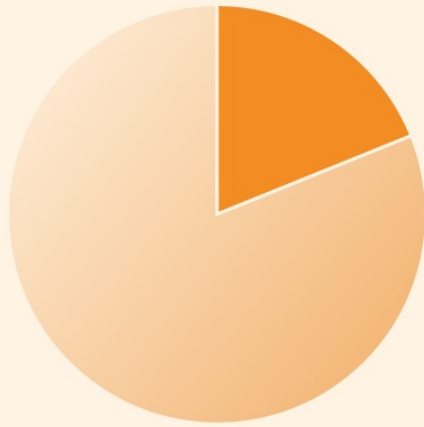
Degrees awarded to women: Mathematics and statistics, 1998, 2008, 2018



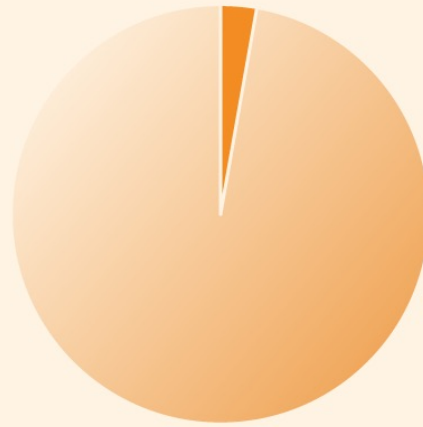
Challenges for Women in STEM



Women make up
29% of the STEM
labor force.



19% of STEM
company board
members are women.



Among STEM
industry CEOs,
3% are women.



Source: <https://www.bigrentz.com/blog/women-in-stem-statistics>

The reality

- 😞 Stereotypes / Assumptions
- 😞 Lack of Confidence
- 😞 Lack of mentorship
- 😞 Competition
- 😞 Many more!

Imposter Syndrome is Real!

As human, I also experience “symptoms”
And other doubts or concerns:

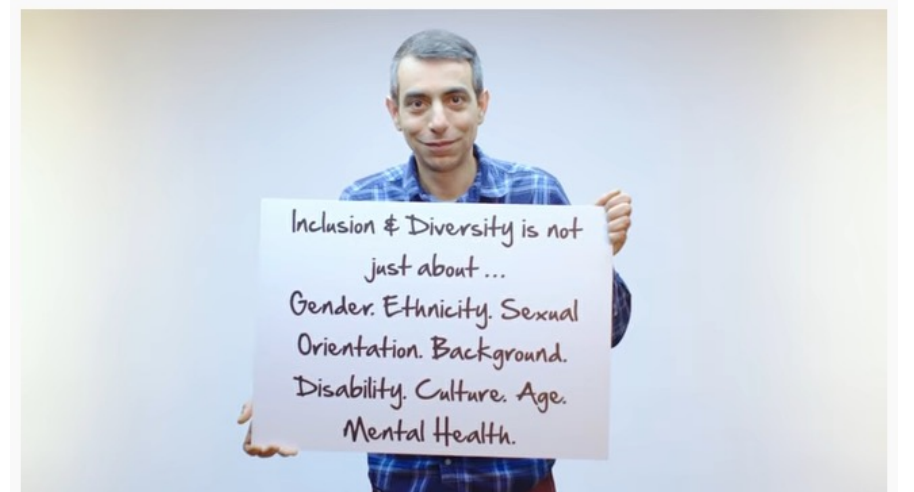
- Am I good enough?
- I must be just lucky
- ...

So, what can we do as women in STEM?
I will share what has helped me



#InclusionStartsWithI

Accenture Inclusion & The Power of Diversity | Accenture



#InclusionStartsWithI

Accenture Inclusion & The Power of Diversity | Accenture

Source: <https://www.youtube.com/watch?v=2g88Ju6nkcg>

Realizing

- **Almost all fields are competitive**
- **Time is finite** (within and outside work/career)

Step #1:

Align your research **interests** with your **strengths**.

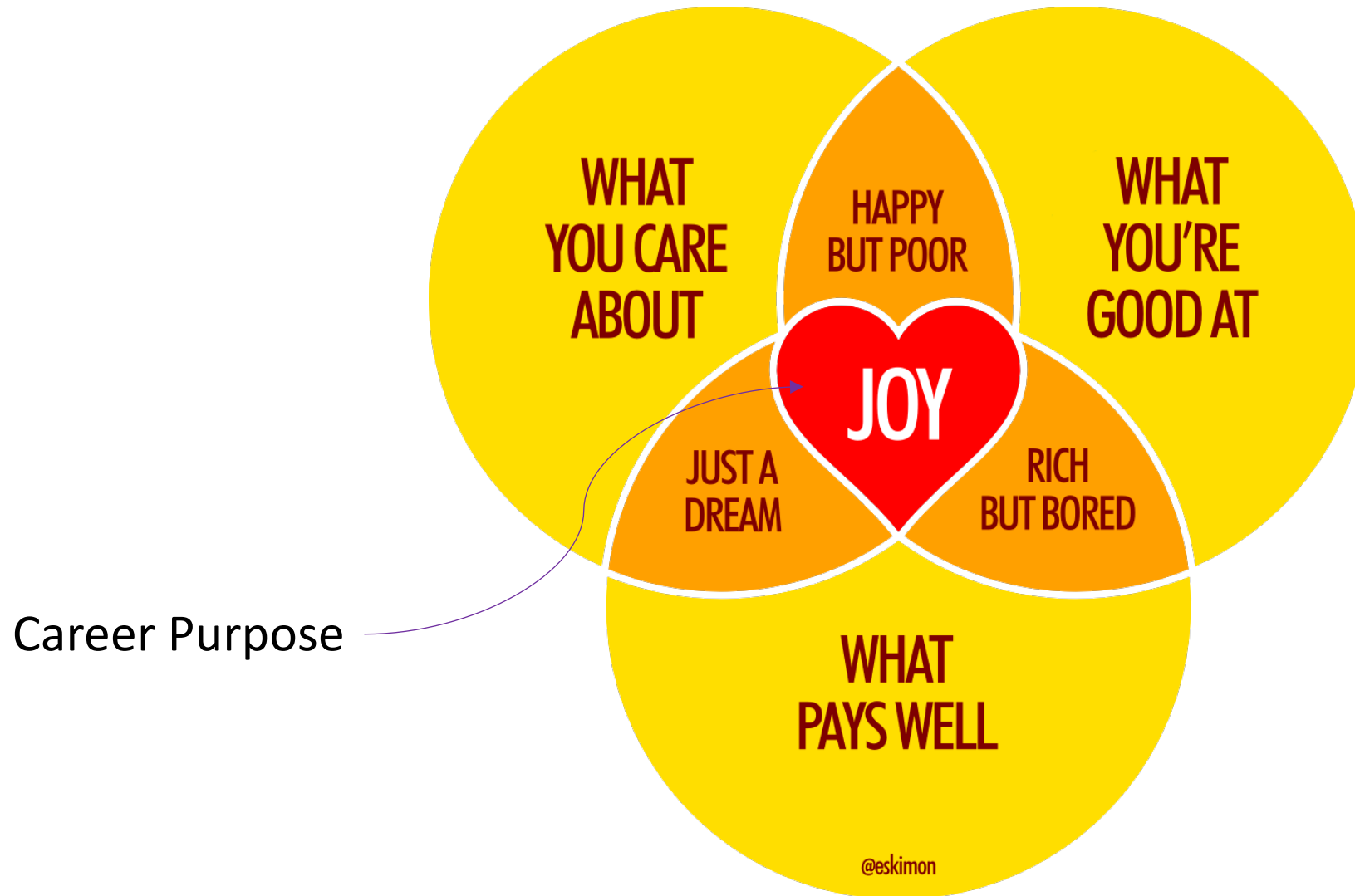
You will be more **creative** and would want to execute and bring your ideas to life.

Optimize both **success** and **happiness**!



<https://i.pinimg.com/736x/26/69/41/266941c6285e0a6f99d2efdeaa3f6b25.jpg>

The ideal place to be

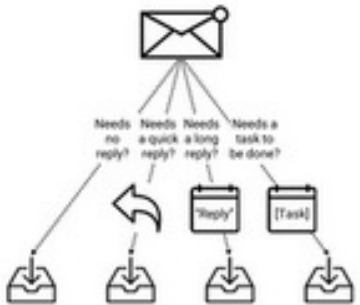


Learn generally useful skills

Get your technical and time management skills together

<https://missing.csail.mit.edu/>

Read and adopt tips and advice (the ones that work for you)
about speeding up processes (code, writing, plots, time blocking, calendar)



Checking Email → Inbox Zero

A methodology for checking email that leads to inbox zero.

Devi Parikh Jul 3, 2018



Calendar. Not to-do lists.

Viewing time as space.

Devi Parikh Apr 25, 2018



Intrinsic motivation, sparks of joy, and time management

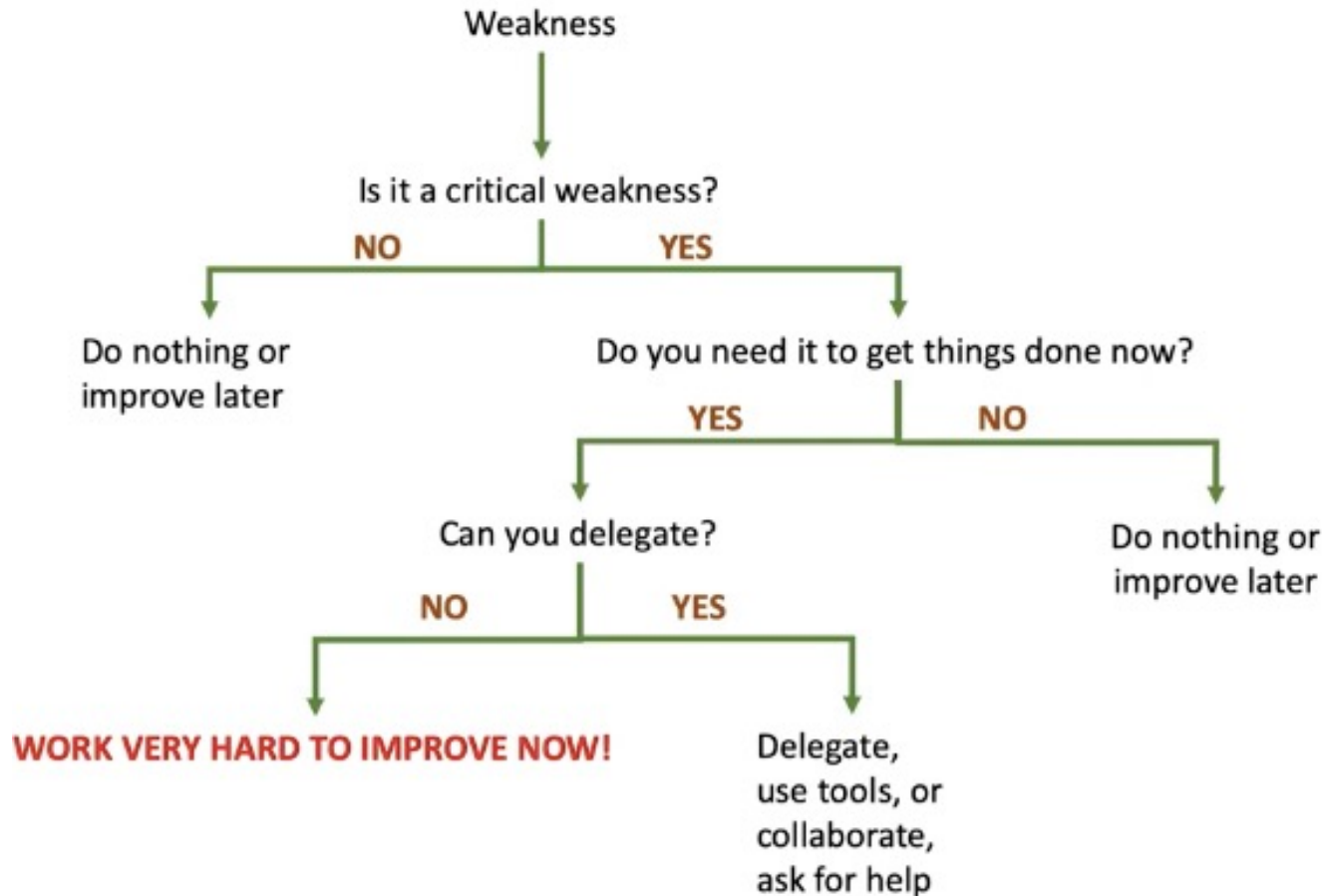
How I sustain and approach work-life balance

Devi Parikh



Useful advice I go back to frequently, from Prof. Devi Parikh: <https://deviparikh.substack.com/>

Work on (some) weaknesses



Fascinated by math
Never had the time to properly learn and advance 😞

Can't do theory work obviously, but I can collaborate with theoreticians 😊

Will work on it as a hobby but mostly delegate



Source: Randy Pausch's Time Management Strategy
By Prof. [Daphne Yao](#) (Virginia Tech)
<https://www.youtube.com/watch?v=wTwEIng0iqQ>

And then ...

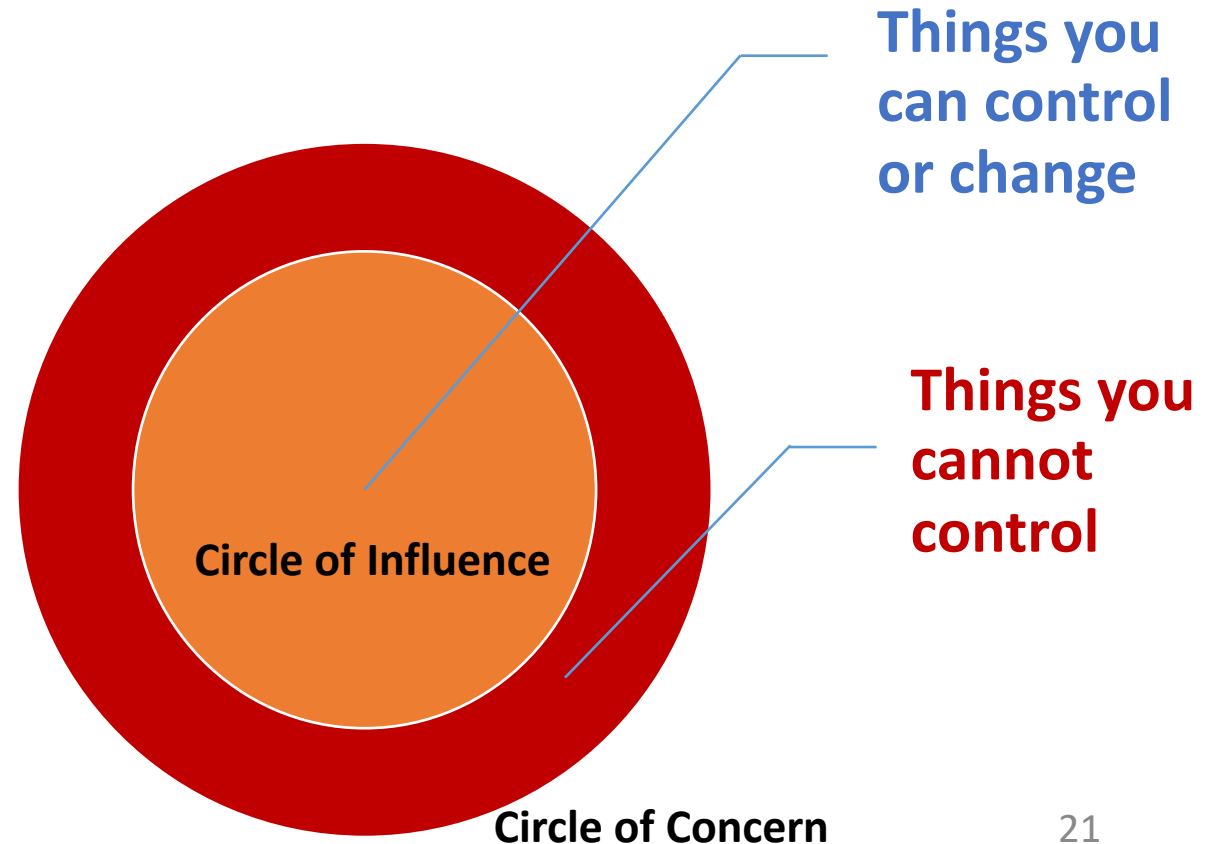
Work hard and be proactive

Seize the opportunities (to present, to network, get out of your comfort zone)

Re-evaluate your commitments and plans when needed

Remember **why** you like what you do

Trust yourself



Helps you focus on the good things

Proactive

- Prepare before things happen
- Ready to face challenges with a calm attitude
- Choose how to respond on things that happen
- Understand that some things will not go your way and that is OK



Reactive

- Deal with items when they happen instead of being prepared
- Anxious and stressed when things do not go your way

Reactive Language	Proactive Language
There's nothing I can do	Let's look at our alternatives
That's just the way I am	I can choose a different approach
That makes me so mad	I have control over my own feelings
I have to do that	I will choose an appropriate response

Source: <https://www.calmsage.com/wp-content/uploads/2021/04/reactive-vs-proactive-thinking.png>

Be more than that ...

Persistent

Resilient

Brave

Curious, ask questions, ask for feedback

Never give up!

NO ONE can do exactly what you can do

Everyone is different

You are **unique** and **indispensable**



Source: https://m.facebook.com/therabox/photos/a.1817870881796618/2819336478316715/?type=3&_rdr

And then ...

Promote yourself

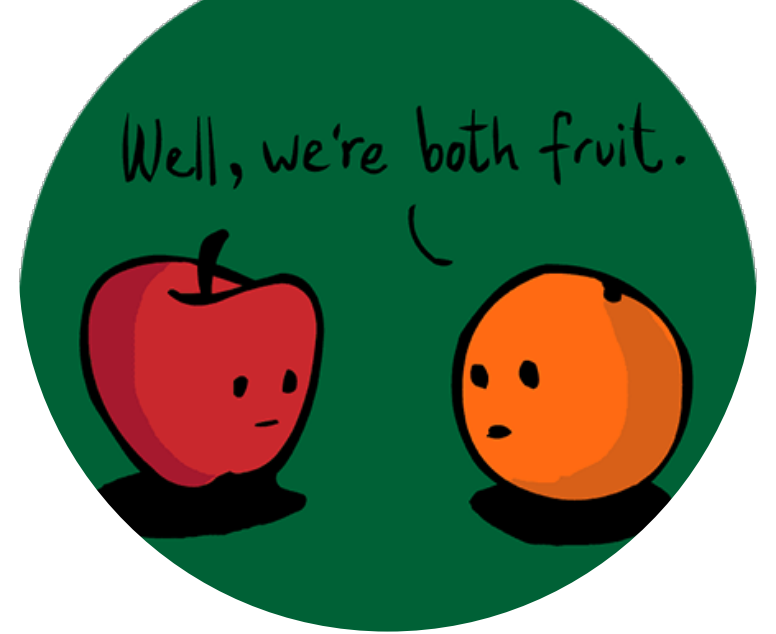
No-one else will do this better than you for you

Be your own cheerleader and celebrate your accomplishments instead of downplaying them.



Source: https://transcendculture.co/wp-content/uploads/2012/12/825880_thumbnail1-1024x790-600x463.jpg

Comparing is meaningless



Compare only with yourself

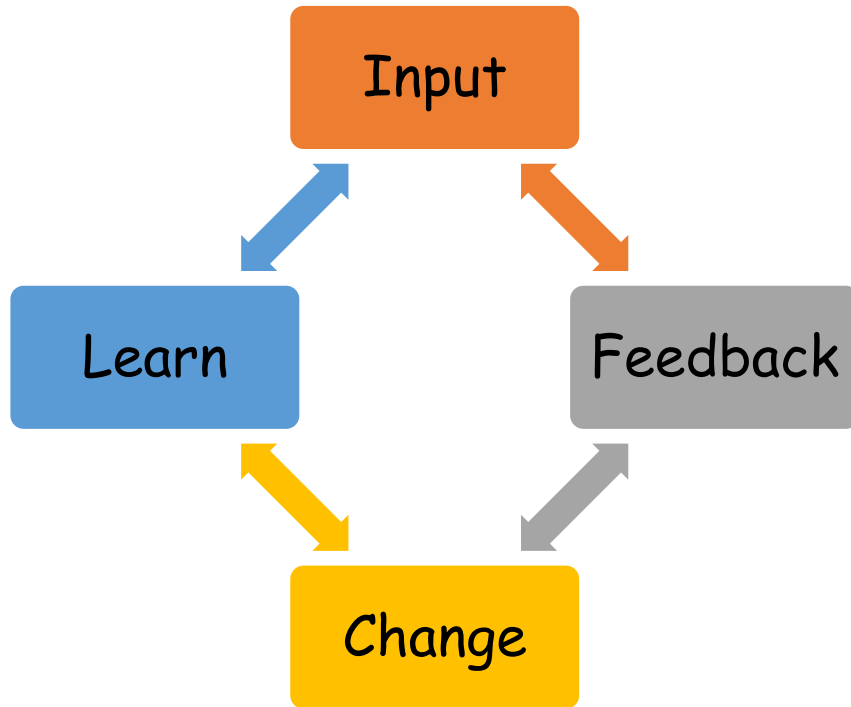
No need to worry about metrics such as number of publications, citations, likes, posts, funds, rankings, tenure, promotion, etc.

Focus on your [research] path.

If you love what you do these will eventually come ...

And if not, **you still will have spent your time doing what you love!**

Copying with ...



Failure, criticism and rejection

May happen (quite frequently)

Graduate admissions, tests, exams, papers, jobs, promotions, ...

Review, learn and improve

Take constructive feedback
but also, ***respectfully*** defend your work



Aditya Parameswaran
@adityagp

...

Coping with Rejection in Academia: A Three-Pronged Approach.

[Μετάφραση Tweet](#)



loom.com
Coping with Rejection

Source:

<https://twitter.com/adityagp/status/1300468018086989825>

Worth to watch!

Find mentors

- ✓ They will be your support system and help you thrive
- ✓ Not necessarily female
- ✓ Not necessarily an academic
- ✓ Better to have diverse set of mentors → “multi-view learning”
- ✓ The mentor list is not static, changes through time



Prof. Filia Makedon, UTA



Prof. Stavros Toumpis
AUEB



Prof. Michalis Vazirgiannis,
Ecole Polytechnique



Prof. Chengxiang Zhai,
UIUC



Daniel Gruhl, IBM
Research



Alfredo Alba,
IBM Research



Steven Welch,
IBM Research

+ Prof. Kalamboukis, AUEB (no pic)

Thankful for the advice and mentorship I have received

Give back to your community → Collective effort

- Share your experiences with your peers
- Mentor students
- Find courage, stand up for others
- Support diversity
- Empower and encourage others around you
- Confront your own biases and assumptions



Besides, all these challenges are gifts

CHALLENGES ARE GIFTS THAT FORCE US TO
SEARCH FOR A NEW CENTER OF GRAVITY.
DON'T FIGHT THEM. JUST FIND A
DIFFERENT WAY TO STAND.
- OPRAH WINFREY -

Do not underestimate the power of _____ students.

First Generation

Mothers with dependent children

African American

Hispanic

Native American

...

Document your experiences

Parents of first-generation college students often lack awareness of the social and economic benefits of college attendance and are **less likely to attend information sessions about college, seek out financial aid information, or go on college visits**. If I wanted to attend college, I had to educate myself about schools, majors, financial aid, and scholarships.

...

First-generation college students are much more likely to enroll in less selective two-year and four-year institutions due to **concerns about college costs, financial aid, and being able to work while attending school**.

...

First-generation college students have less confidence in their abilities to succeed.

My time as a waitress felt like no match to other students' internships at the World Bank, JP Morgan, and the United Nations. Instead of doing unpaid internships on Capitol Hill, I worked a minimum wage job and served as a resident assistant to help cover the enormity of expenses that came with attending such a prestigious university.

...

I entered college with the utmost determination to graduate, and I left college with a degree that represents personal transformation, resilience, and promise. **My education enlightened me to systemic injustice** that prevents many first-generation students, students from low-income families, and students of color from graduating.

<https://all4ed.org/blog/the-challenges-and-privileges-of-being-a-first-generation-college-student/>

A resilient college student that persists in their goals and dreams.

Have Fun!



Time remains finite even after this talk

Other Resources

AI research:

The unreasonably narrow path
and how not to be miserable

Google Tech Talk
21 Oct 2020

Rosanne Liu
<http://rosanneliu.com>

https://www.youtube.com/watch?v=0blQp0_9NwY

If only one talk/video, watch this one!



Humans of AI: Stories, Not Stats

by Devi Parikh and Dhruv Batra

In this interview series, [Devi Parikh](#) and [Dhruv Batra](#) talk to AI researchers to try and understand who they are as people, what their life is like, what they think about, what they are insecure about, and what they get excited about – questions that reveal the stories of their day-to-day life.

<https://www.humanstories.ai/>



INDIVIDUALIZED CYBERSECURITY RESEARCH MENTORING (IMENTOR) WORKSHOP 2021

<https://sites.google.com/vt.edu/imentor/program>

IMMIGRANT COMPUTER SCIENTISTS PODCAST

An Oral History Project featuring Prominent Computer Scientists

<http://csimmigrant.org/>

New In ML workshop at NeurIPS 2021

A workshop to help young researchers do solid work and publish high-quality papers.

https://sunhaozhe.github.io/NewInML2021_NeurIPS/

Other Resources



LatinX in AI

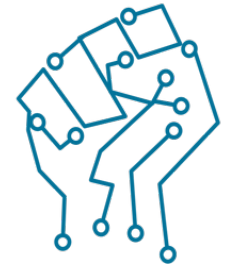
<https://www.latinxinai.org/>



<https://risingstars21-eecs.mit.edu/>



<https://wimlworkshop.org/>



Black in AI

<https://blackinai.github.io>



CRA

Computing Research
Association

<https://cra.org/for-students/>

{DIS}ABILITY IN AI

https://elesa.github.io/ability_in_AI/