Generative AI and ethics in teaching & learning

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NYU TANDON SCHOOL OF ENGINEERING

NYU Center for Data Science

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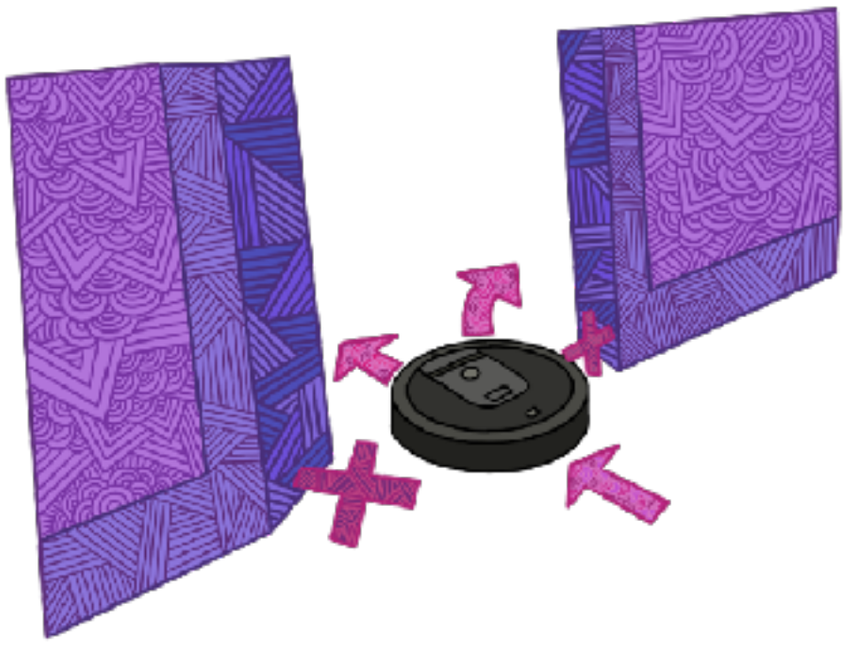
AI: algorithms, data, decisions



Artificial Intelligence (AI)

a **system** in which **algorithms** use **data** and make **decisions** on our behalf, or help us make decisions

Responsible AI by example

clear need for improvement

can validate predictions

technical readiness

decision-maker readiness

What is fastMRI?

fastMRI is a collaborative research project between Facebook AI Research (FAIR) and NYU Langone Health. The aim is to investigate the use of AI to make MRI scans up to 10 times faster.

By producing accurate images from under-sampled data, AI image reconstruction has the potential to improve the patient's experience and to make MRIs accessible for more people.

To enable the broader research community to participate in this important project, NYU Langone Health has released fully anonymized raw data and image datasets. Visit our github repository, which contains baseline reconstruction models and PyTorch data loaders for the fastMRI dataset.

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AI ethics:

2 entry points

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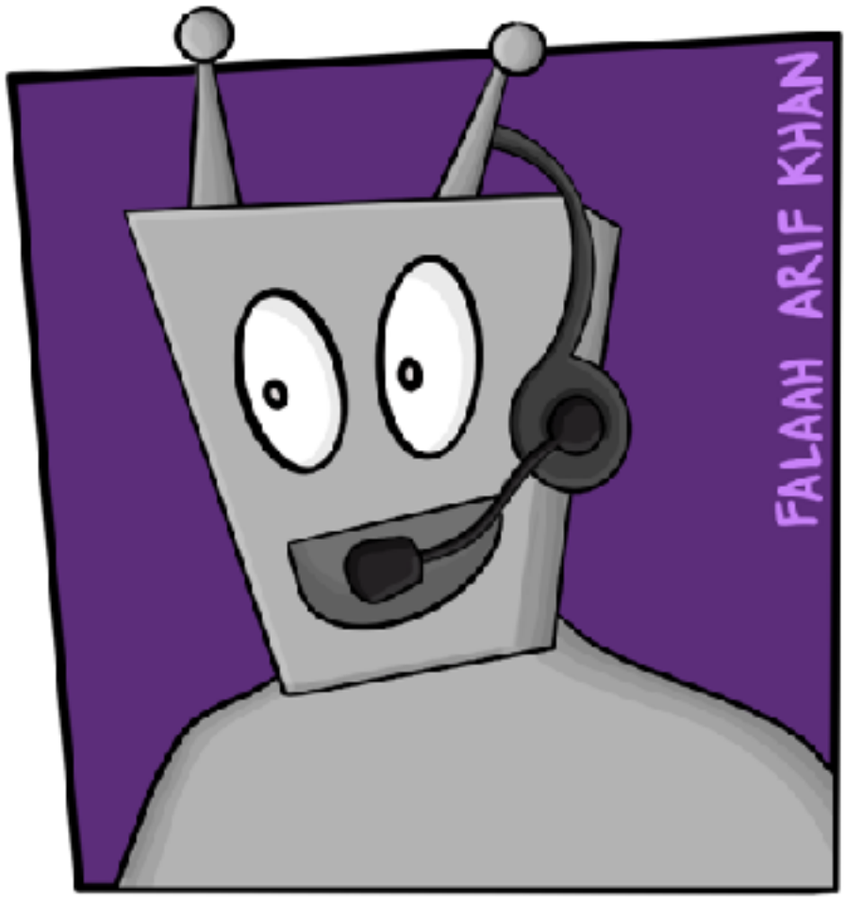
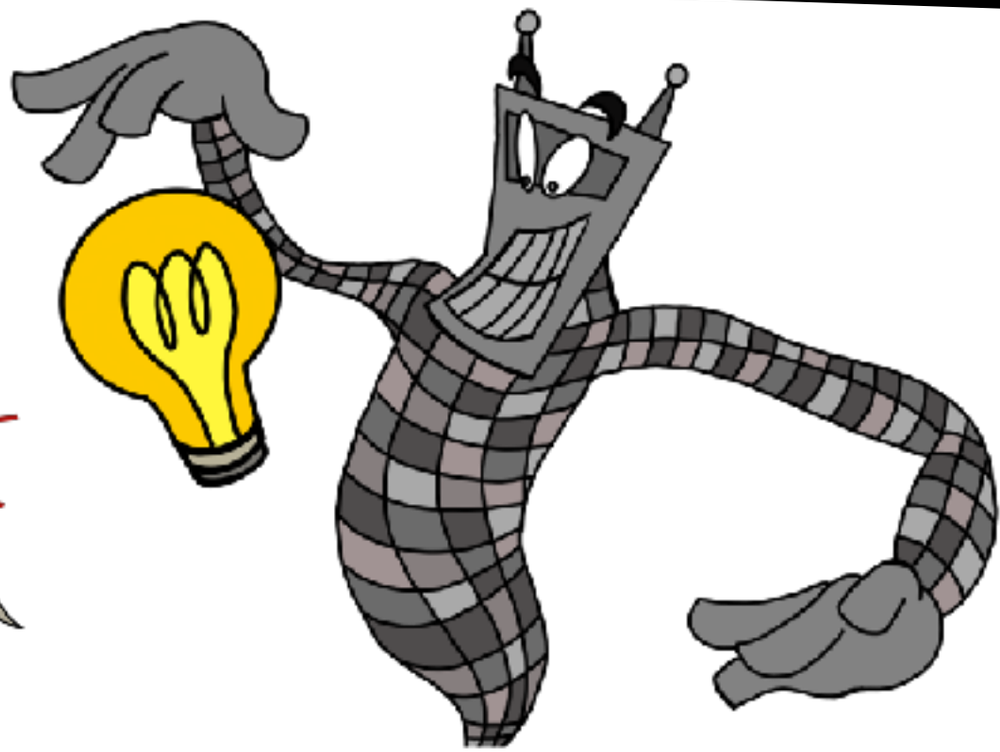
Machines make mistakes



Mistakes lead to harms



Harms can be catastrophic

United Nations

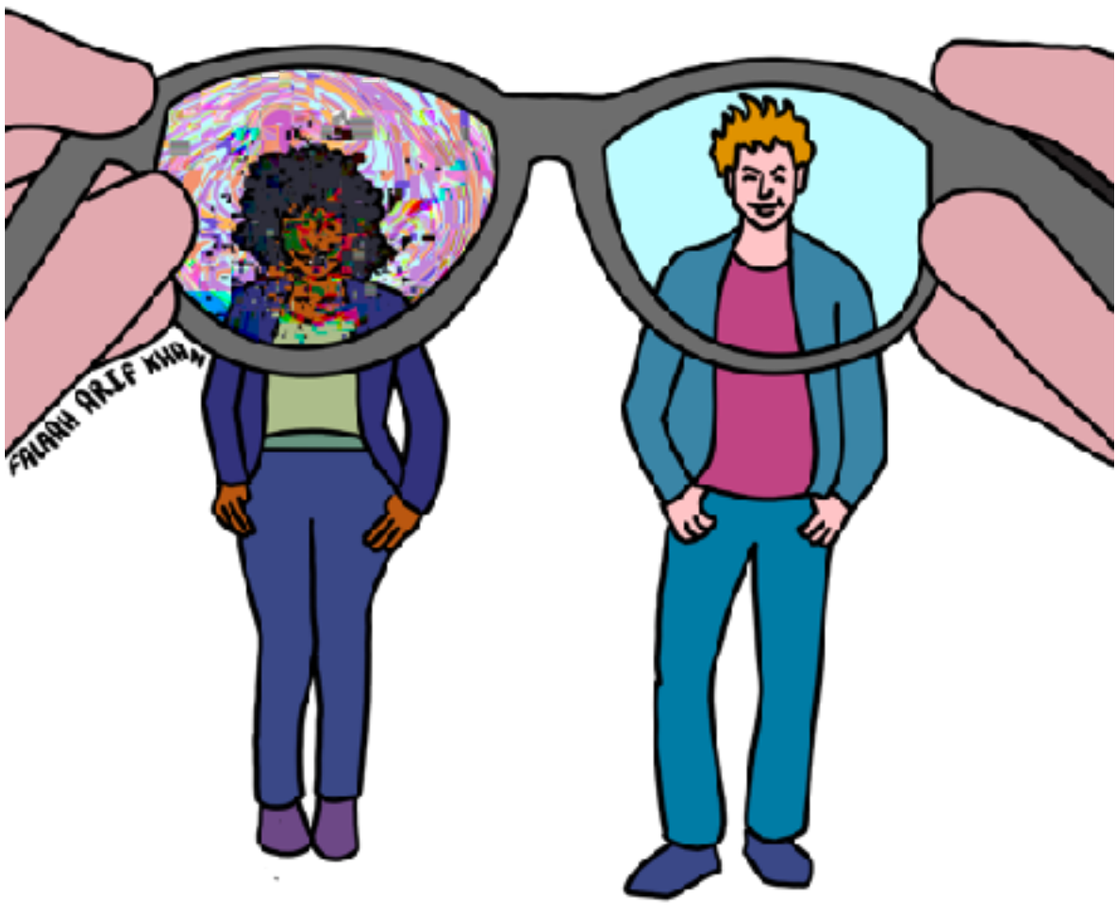
General Assembly

Rights of persons with disabilities

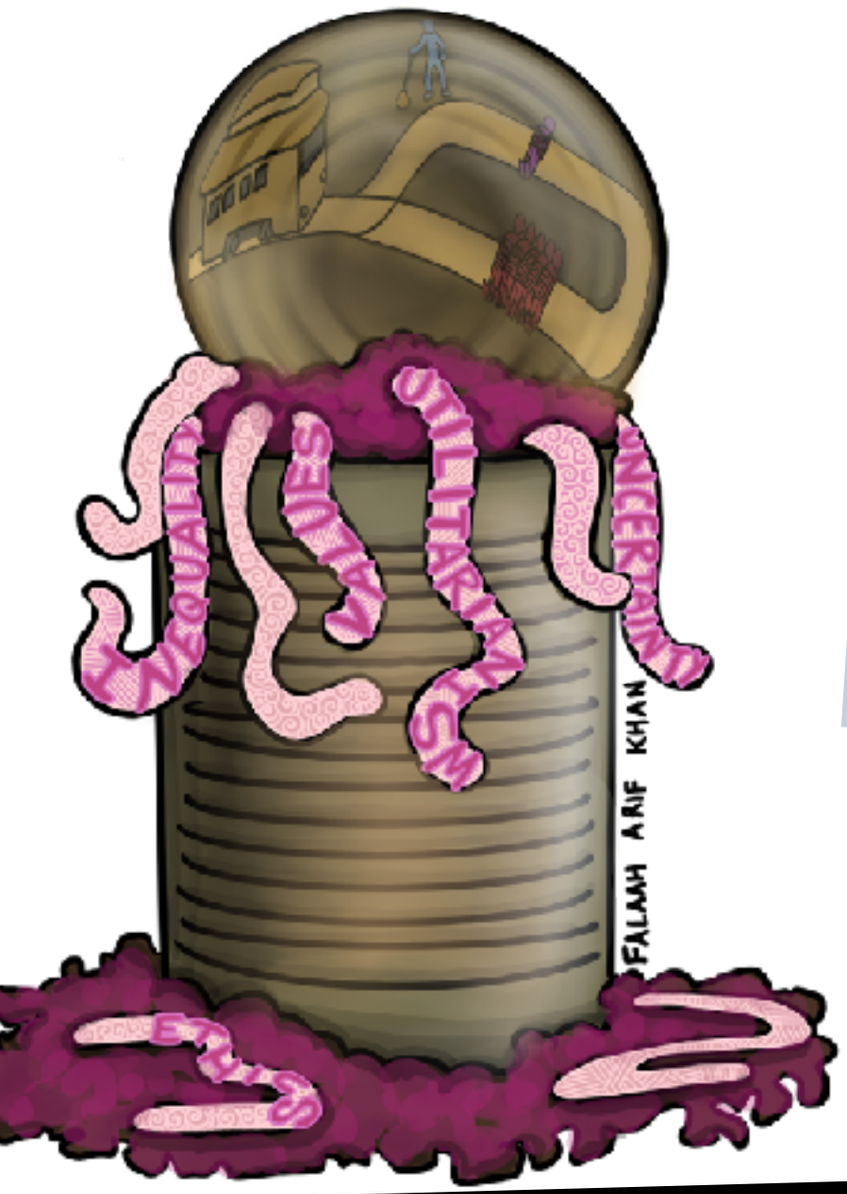
Report of the Special Rapporteur on the rights of persons with disabilities

"…the deployment and use of fully autonomous weapons systems, like other [AI] systems, raises concerns as to the ability of weaponry directed by [AI] to discriminate between combatants and non-combatants, and make the nuanced determination as to whether an assistive device qualifies a person with disabilities as a threat…" *A/HRC/49/52 28 Dec 2021*

Harms can be cumulative



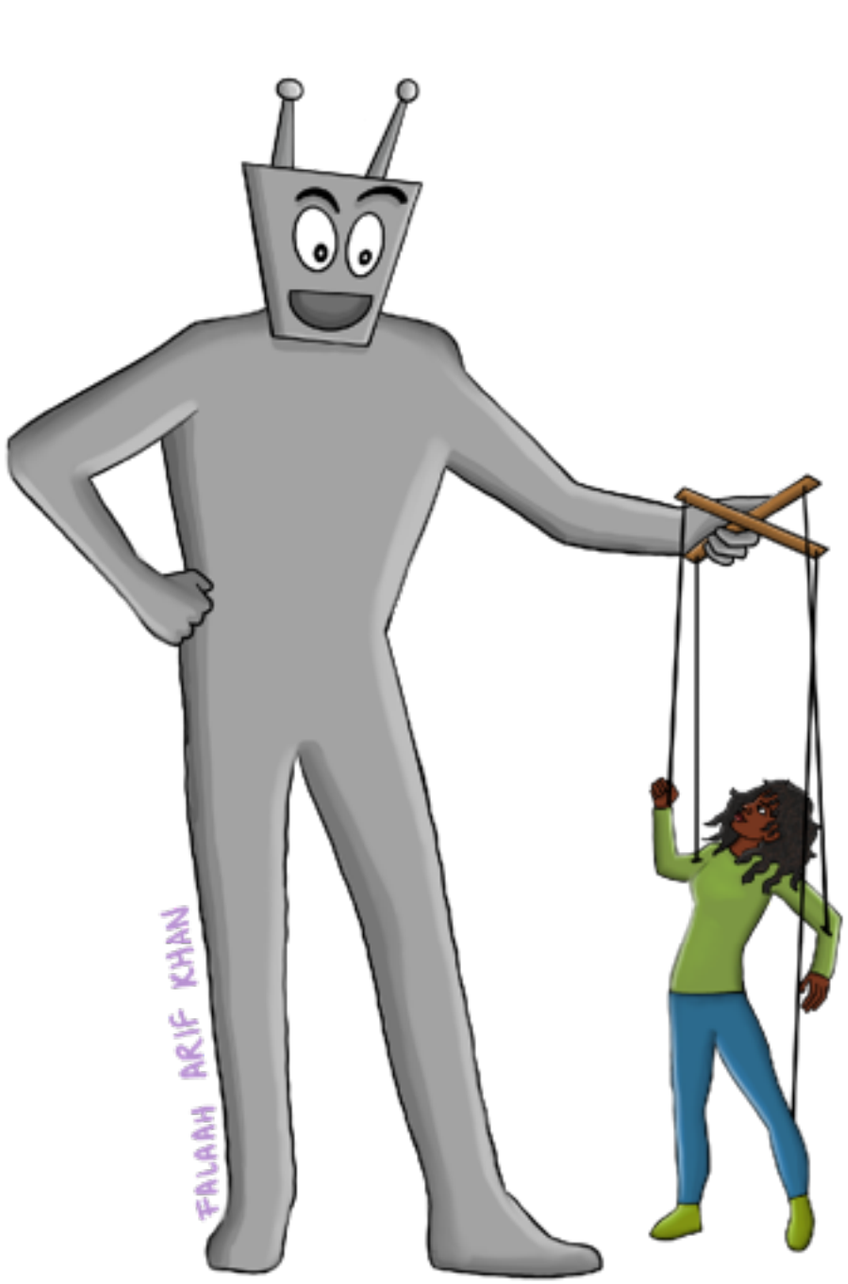
Utilitarianism & algorithmic morality

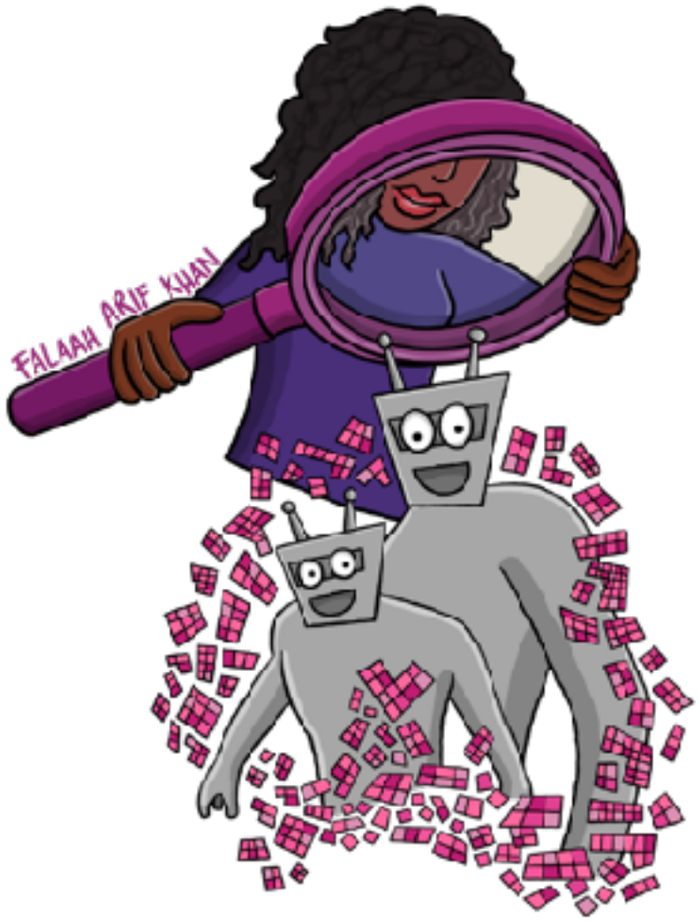


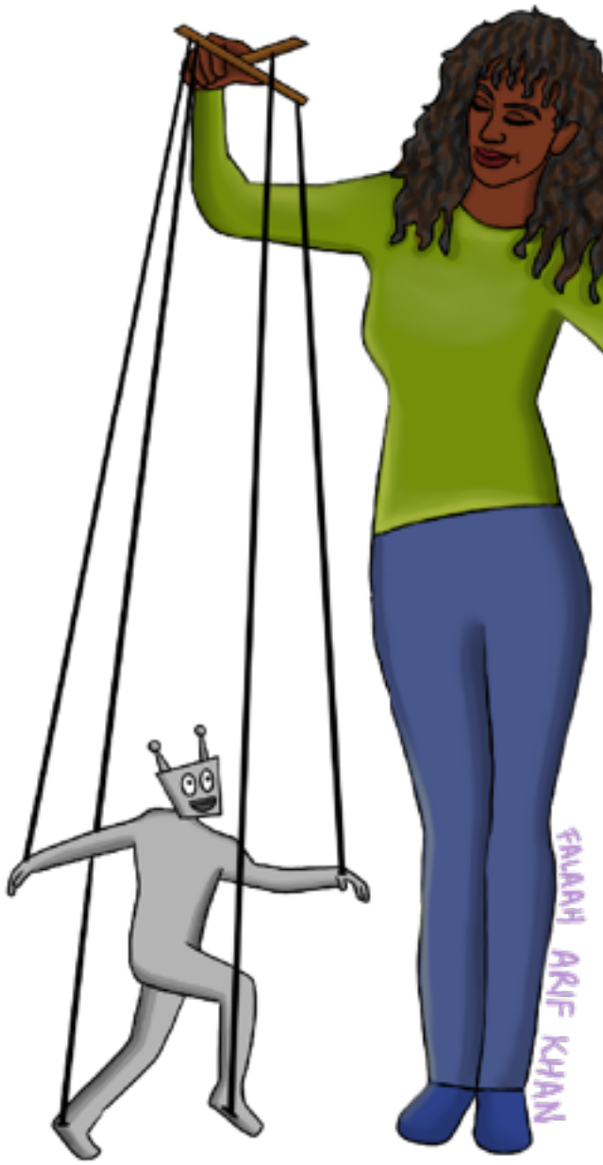
"It is the greatest happiness of the greatest number that is the measure of right and wrong."

Jeremy Bentham

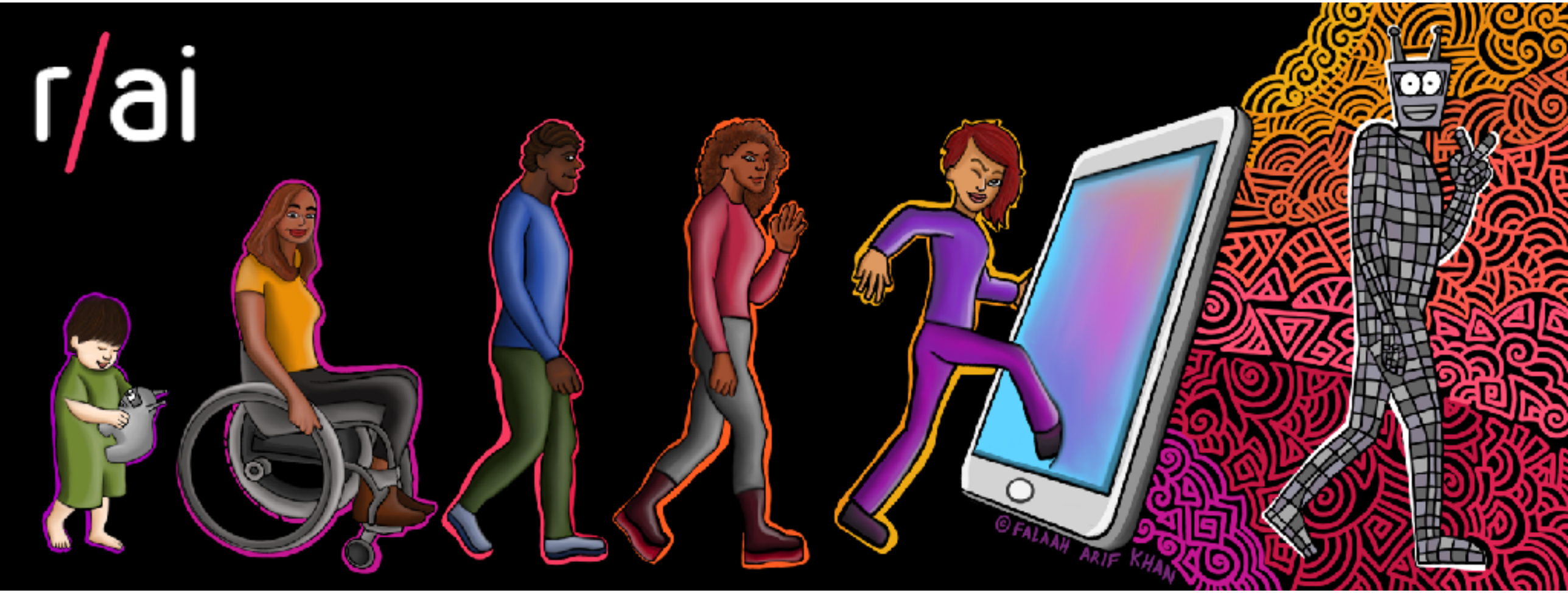
Another dimension: agency & control







AI for whom?



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Questions to keep in mind

what are the **goals** of the AI system?

what are the **benefits** and to **whom**?

what are the **harms** and to **whom**?

who is in a position to mitigate?

case study

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AI tutoring bots: How it started

The New York Times

By Natasha Singer

Natasha Singer, who covers education technology, reported from Newark.

June 26, 2023

Students in Cheryl Drakeford's third-grade class in Newark are trying Khanmigo, a new A.I.-assisted tutoring bot. Gabriela Bhaskar for The New York Times

In Classrooms, Teachers Put A.I. Tutoring Bots to the Test

Newark public schools are cautiously trying out a new automated teaching aid from Khan Academy. The preliminary report card: "could use improvement."

makes mistakes

gives away answers too quickly

costs can be high

ALSO: environmental impact

risk of bias, risk of hate speech

data privacy concerns

https://www.nytimes.com/2023/06/26/technology/newark-schools-khan-tutoring-ai.html

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AI tutoring bots in NYC schools

CITY & STATE NEW YORK

After initially shunning artificial intelligence, NYC schools partner with Microsoft on AI teaching assistant

New York City schools are hoping to implement the AI assistant in every classroom.

The AI teaching assistant has been used in three high school computer science classes. HILL STREET STUDIOS/GETTY IMAGES

By SAHALIE DONALDSON | SEPTEMBER 14, 2023

The New York City Public School district has rapidly changed its stance on the use of AI in classrooms over the past year. When fears about the potential misuse of a new artificial intelligence-powered chatbot called ChatGPT began sweeping the country, **the education department blocked access to the program on education department devices and networks in early January**, citing concerns about its impact on student learning, cheating and the safety and accuracy of content.

"**Eventually we just realized that technology is not something we can hide from students**," Anwar told Microsoft Source. "You need to embrace it, introduce it in a controlled fashion. So we said, 'OK, we have a data foundation. ChatGPT and OpenAI are here. Let's work with Microsoft to bring this into the classroom.'"

https://www.cityandstateny.com/policy/2023/09/after-initially-shunning-artificial-intelligence-nyc-schools-partner-microsoft-ai-teaching-assistant/390292/

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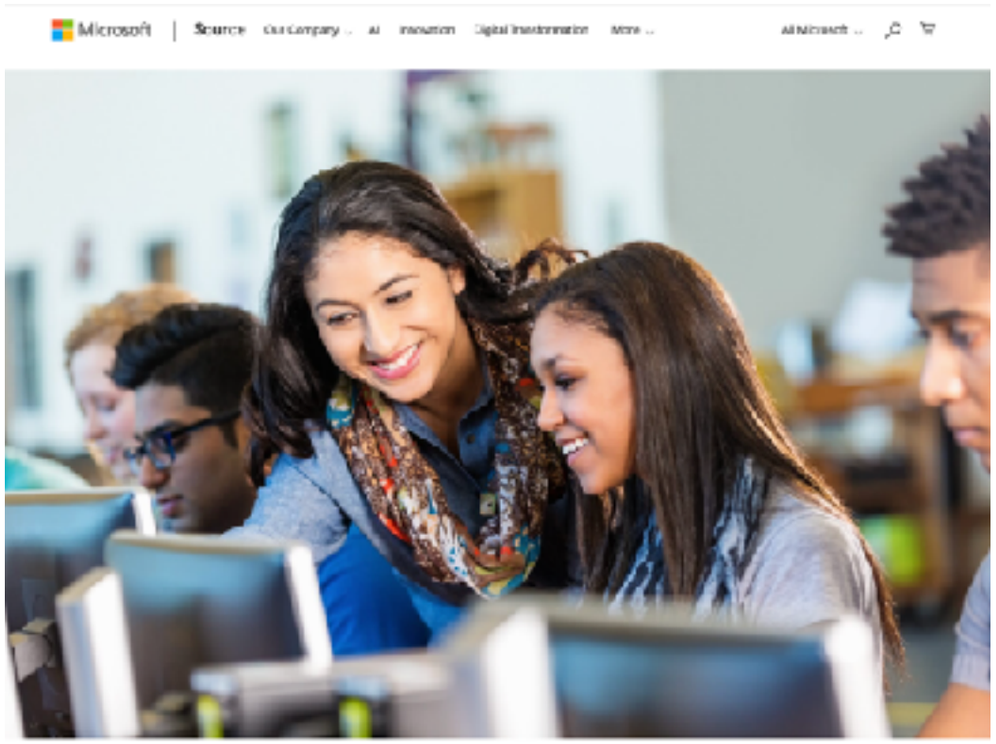
AI tutoring bots in NYC schools



Digital Transformation

'Technology is not something we can hide from students': How NYC Public Schools invited AI into its classrooms

SOURCE: What was the district's goal in creating an AI-powered chatbot?

CARROZZA (Director of Digital Learning and Innovation Team): We're focused on creating 21st century, student-centered classrooms. That's really where the concept of the teaching assistant comes from: We want to give as much individualized support as possible to every student. It allows for continuous and personalized feedback to a student.

SOURCE: **So you had the curriculum. But where did the data come from?**

ANWAR (Chief Product Officer): During Covid, we worked with Microsoft to create a data hub we call DAP – data as a platform. Currently, DAP has close to 2 billion records. That data was our foundation when we began collaborating with Microsoft on the teaching assistant.

It is critical for everyone to understand that the model and the data only live in the (Department of Education) environment. Building this on Azure OpenAI Service is key for us in terms of security of our data.

https://news.microsoft.com/source/features/company-news/how-nyc-public-schools-invited-ai-into-its-classrooms/

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Who is at the table?

The New York Times

STUDENT OPINION

Would You Want an A.I. Tutor?

Schools are experimenting with new automated teaching aids. Would you welcome a chatbot in your own classroom?

By Jeremy Engle

Sept. 11, 2023

Jade Renaud
Ft. Lauderdale
Oct. 19

I believe that an A.I. tutor could be helpful, however, I also think there are some cons involved. […] The perfect tutor would need to have great communication skills, consistency, and an outstanding knowledge of what I would need help with. In the article, the Khan Academy's pilot test of Khanmigo in Newark Public School was aimed to provide automated teaching assistance, thus offering personalized learning experiences and additional support. I think that learning at your own pace is a good way of studying, however, the A.I. may provide false information nor give an explanation for what is being asked. The A.I. just makes your life easier and instead of critically thinking about what to say we directly refer to this robot for the answers. A.I. has definitely affected me as a student due to it being very tempting to use but it is not worth the amount of trouble I could be in. A.I has also started taking jobs from teachers and other private tutors which could result in an increase of unemployment.

https://www.nytimes.com/2023/09/11/learning/would-you-want-an-ai-tutor.html

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The New York Times

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Sofia Lukasik (block 3)
Hoggard High School in Wilmington NC
[…] I wouldn't want an A.I. tutor, because I tend to learn better with human interactions.

Morgane S-T
Hoggard High School
Despite all of the positive ideas said about chatbots in a classroom, I would not want to rely on one for my learning. I do admit, ChatGPT has helped me through rough times (one time I had a math test in which I couldn't find any review for, so I asked ChatGPT bot to generate some problems for me. They really helped!), but I wouldn't use it as a second teacher. If schools still want to move forward with AI, they should proceed with caution… Before we know it, AI will take over!

https://www.nytimes.com/2023/09/11/learning/would-you-want-an-ai-tutor.html

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Few answers from the DOE

THE NEW YORK CITY COUNCIL

Adrienne E. Adams, Speaker

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Details

Meeting Name:	Committee on Technology	Agenda status:	Final
Meeting date/time:	9/20/2023 1:00 PM	Minutes status:	Final
Meeting location:	Council Chambers - City Hall *Jointly with the Committee on Education.*		
Published agenda:	Agenda	Published minutes:	Minutes
Meeting video:	Video		
Attachments:	CLICK ANY FILE # BELOW (in blue) TO ACCESS LEGISLATION AND ATTACHMENTS		

Meeting Items (10)

10 records | Group | Export | Show: All agenda items

File #	Ver.	Prime Sponsor	Agenda #	Agenda Note	Name	Type	Summary	Action	Result	Action Details	Multimedia
										Roll call	Not available
T2023-3907	*				Oversight - The Role of Artificial Intelligence, Emerging Technology, and Computer Instruction in New York City Public Schools.	Oversight		Hearing Held by Committee		Action details	Not available
T2023-3907	*				Oversight - The Role of Artificial Intelligence, Emerging Technology, and Computer	Oversight		Filed, by Committee		Action details	Not available

https://legistar.council.nyc.gov/MeetingDetail.aspx?ID=1115459&GUID=69F7BA51-B1C9-4D22-A73D-D50102B3E201&Options=info%7C&Search=

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we need AI governance

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AI governance framework?

Office of the NEW YORK
STATE COMPTROLLER
NYS Comptroller Thomas P. DiNapoli

Artificial Intelligence Governance

Issued Date: February 16, 2023
Agency/Authority
New York City Office of Technology and Innovation

Objective

To assess New York City's progress in establishing an appropriate governance structure over the development and use of artificial intelligence (AI) tools and systems. The audit covered the period from January 2019 through November 2022.

Key Findings

NYC does not have an effective AI governance framework. While agencies are required to report certain types of AI use on an annual basis, there are no rules or guidance on the actual use of AI. Consequently, City agencies developed their own, divergent approaches. We sampled four City agencies: NYPD, ACS, Department of Education (DOE), and Department of Buildings (DOB). Based on our survey results, we found ad hoc and incomplete approaches to AI governance, which do not ensure that the City's use of AI is transparent, accurate, and unbiased and avoids disparate impacts.

https://www.osc.state.ny.us/state-agencies/audits/2023/02/16/artificial-intelligence-governance

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Do we trust the data?

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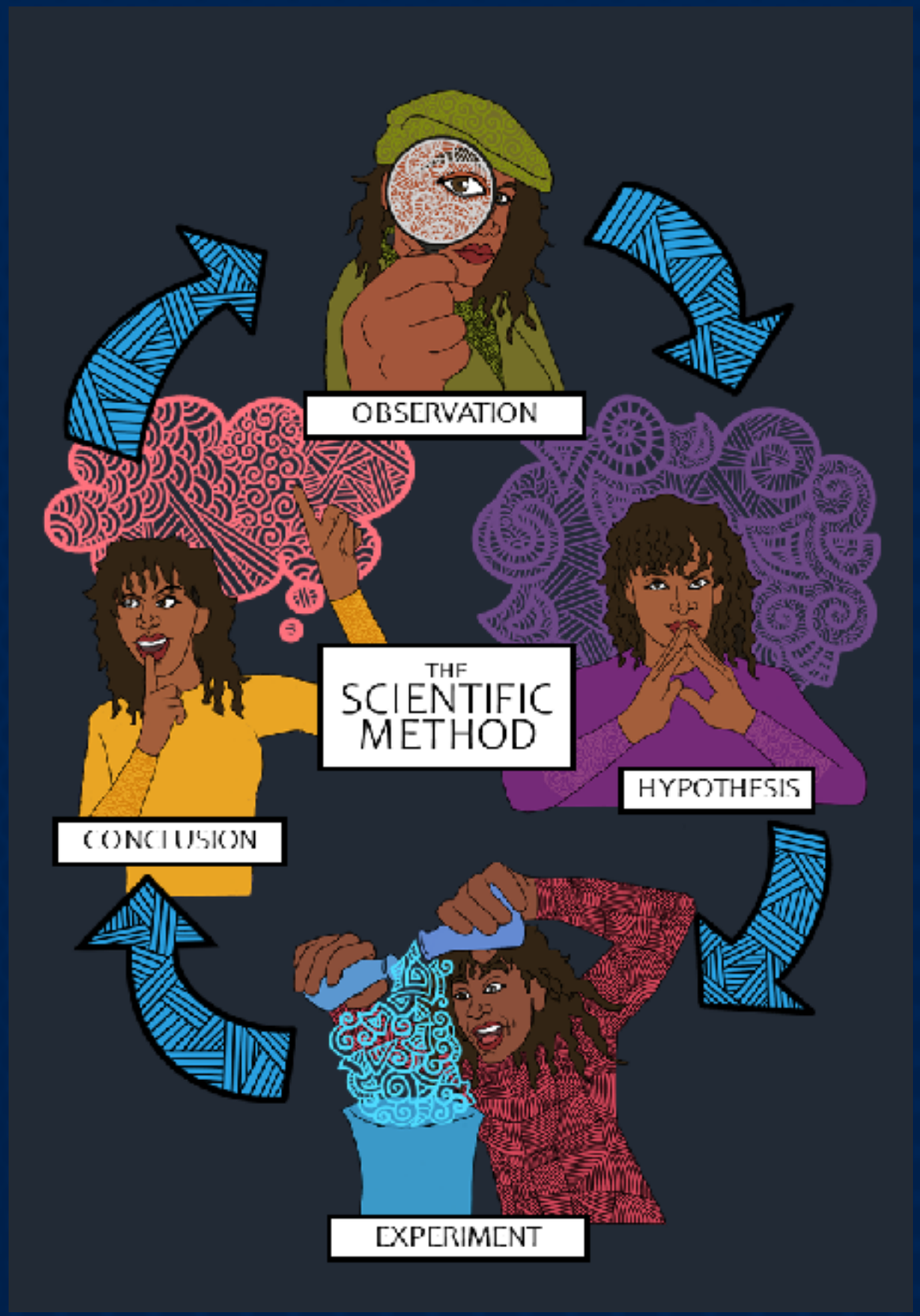
Do we trust the models?

Are we able to validate the tools?



"A theory or idea shouldn't be scientific unless it could, in principle, be proven false."

Karl Popper

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What are we automating?

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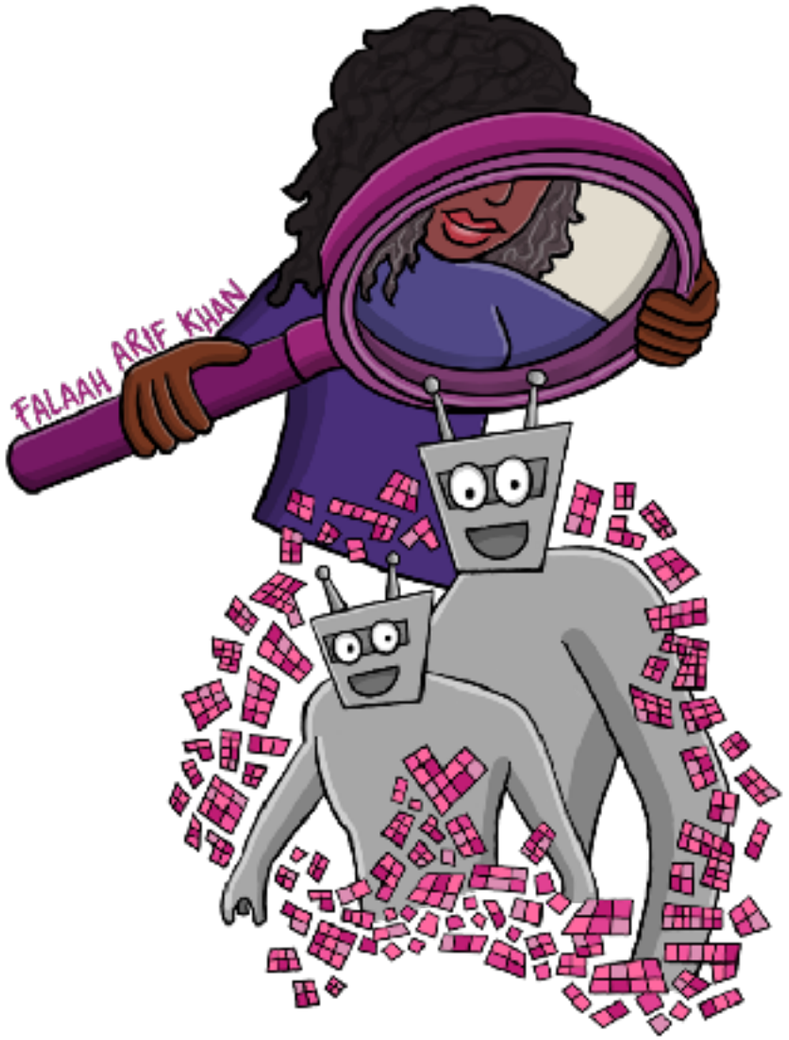
Do people have agency & control?



Thank you!

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