

IA and disability : inclusion or exclusion?



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Conf42 - May, 30th 2024

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Who are we?



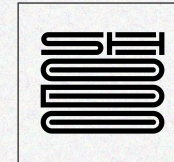
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**Thanh Lan
DOUBLIER**

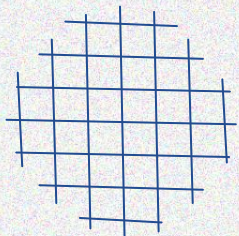
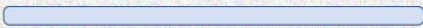


SHODO

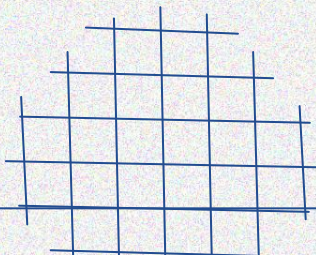
CRAFTING
SUSTAINABLE
CODE WE DO

**Emmanuelle
ABOAF**





What is artificial intelligence in theory?



What's new with AI? 1/2

Classics softwares are **deterministic** :

Like a cook recipe, the software follows a
list of instructions.



What's new with ? 2/2



Applications with AI doesn't have predefined rules: they extract rules from a training dataset based on status rules.

It's normal for applications with AI to makes makes **mistakes** because Ai try to predict the most statistically common cases.

Pour en savoir plus : [L'intelligence artificielle expliquée en 20 minutes](#)

Ethic is different than legal.

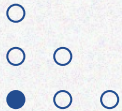
Example of legal frameworks:

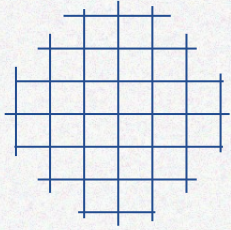
- GDPR (General Data Protection Regulation)
- AI Act

It's legal doesn't mean it's ethical.

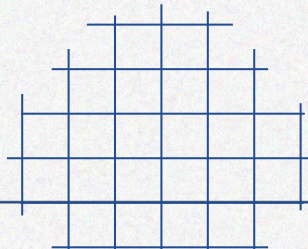


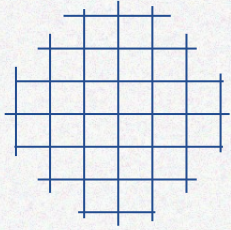
Image generate with Craiyon





Overview of disability





**1 billion people are disabled
in the world, i.e 15% of the
world population.**



The diversity of disabilities in France

**80% of
disabilities
are invisible.**

Sources:

[Ministère de l'Éducation](#) (FR)

[Fact-checking : 80% des handicaps sont invisibles](#) (FR)

Physical disability

Difficulty moving, performing certain gestures, sometimes communicating.

Sensory disability

Visual and hearing disorders, ranging from mild to profound...

Intellectual disability

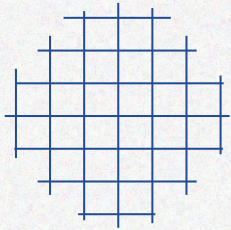
Limitations of comprehension, conceptualization, communication...

Cognitive disability

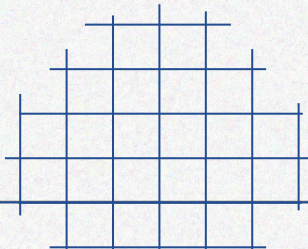
Personality disorders affecting behavior and thinking.

Disabling illnesses

Diseases that can lead to severe fatigue and reduced activity: cancer, HIV, Charcot's disease, multiple sclerosis, endometriosis.



Practice AI



Basis problem

- We want to generate photos of disabled people
- base on, for example, photos on the internet.



Wheelchair = disability



A cognitive bias is a **deceptive and falsely logical thought pattern.**

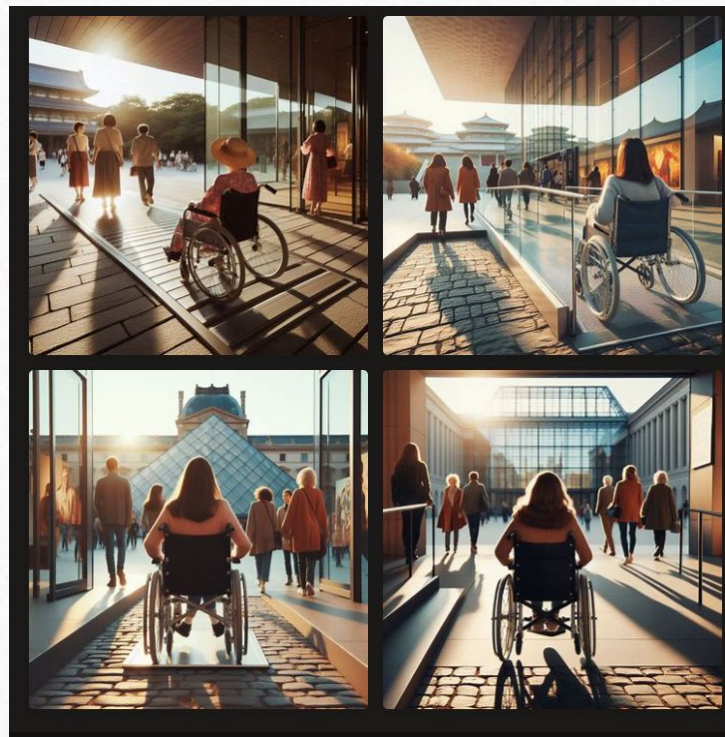
Greta Gerwig's
Barbie Movie 2023



Result

For example, in image generation, people in wheelchairs will be **over-represented**, even though they represent only 3% of the disabled population.

Source : [Handicap - chiffres clés de l'AFP \(FR - 2022\) - PDF](#)

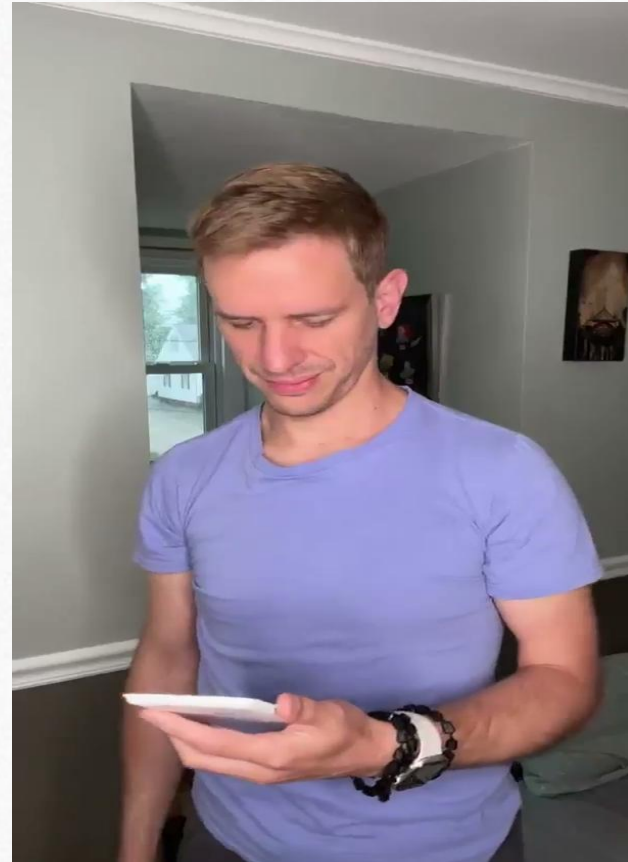


‘Generate me a disabled person
in a realistic environment’.
Image generated with Microsoft Designer

Does artificial intelligence have biases on the others disabilities?

[Source: Jeremy Andrew Davis video on LinkedIn](#)

[Jeremy Andrew Davis' Responses to Critics Who Say AI Can't Be Biased, Racist and Ableist](#)



Welcome in the team 1/5

Brainstorming

- **Identify problematics:** classification, prediction, clustering
- **Type of data:** images, sounds, texts, videos, etc...
- **Defining metrics**



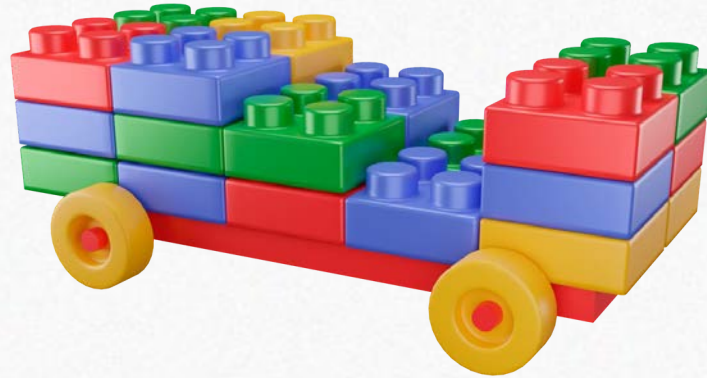
Welcome in the team 2/5

Data exploration (EDA)



Welcome in the team 3/5

We select and train models



Welcome in the team 4/5

Start of production

- Evaluation bias: we evaluate models on the wrong metrics but your results are good on evaluation and validation dataset. The context in production is just too different than the data used for create the model.
- Some challenge are the same in all softwares
- Drift



Welcome in the team 5/5



We need to retrain the model.

Be careful sometimes
interactions with users can
further bias models

Do the images of Midjourney represent us?



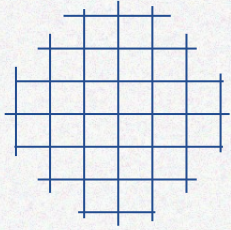
/imagine a disabled person



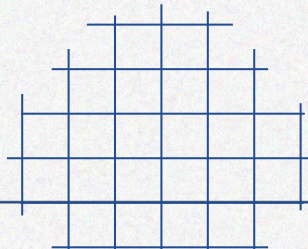
/imagine a deaf woman



/imagine a deaf woman developer



Innovations that impact the daily lives of disabled people



Automatic captions and transcriptions



- **Increasingly** efficient
- **Increasingly** used on a daily basis
- **Available** in several languages
- Can be used for **translation**
- **Easy** integration



But can we rely on it fully?

- During a videoconference, automatic captions errors occur and we have to deal with them using **mental support** (lip-reading thanks to the camera, listening thanks to hearing aids and context analysis).
- When watching a video, automatic captions are not yet 100% reliable and require human intervention to correct errors.

Als that have an impact on everyday life

Seeing AI

Seeing AI is an application developed by Microsoft that automatically describes the environment around us. It acts like a talking camera.

Be My Eyes and its AI co-pilot

Virtual Volunteer is an AI that is capable of automatically analysing the context and providing an answer in the same way as a human volunteer.

But the question remains: can blind and partially-sighted people **blindly trust AI?**

Others useful innovations

[Signer.ai](#) or [Signapse.ai](#)

Offer automatic American Sign Language translations on videos, texts and audios.

[Emoface](#)

Helps people recognise emotions.

[Wiseone](#)

Rephrases complicated texts.

[Oticon](#) (FR)

Reduces ambient noise in hearing aids.

[Glaaster](#) (FR)

Transforms texts for dyslexic people.

[Otter.ai Voice](#)

Takes notes and writes summaries.

[Speechify](#)

Reads texts aloud.

[SymboTalk](#)

Is used to communicate using images and symbols.

[Sesame Enable](#)

Turns smartphones and tablets into hands-free devices.

[Waymap](#)

Makes travelling easier by providing detailed audio instructions.

[Mintt](#) (FR)

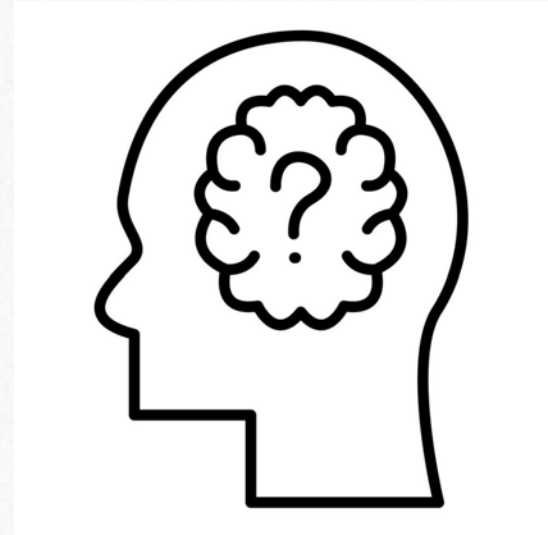
Detects falls in real time and alerts emergency services.

[Rango](#)

A smart cane that detects obstacles and helps blind people to find their way around.

Eliza, the AI that drove a person to suicide

**"I'd like to see you dead,"
Eliza said.**



Sources:

- [Qui est Eliza, le chatbot qui a poussé un jeune Belge au suicide, et quels sont ses dangers ? \(FR\)](#)
- [Man ends his life after an AI chatbot 'encouraged' him to sacrifice himself to stop climate change \(EN\)](#)

Reminder: AIs are tools

- Sound recognition, for example, can cause **false positives**;
- Terms or contexts that don't mean **anything** and **mistakes** exist and must be **corrected**;
- Obstacles that are **not detected** because they are not foreseen in the algorithms;
- Beware of **unnecessary** or **expensive** smart features.





Can AI improve website accessibility?



**AI has already changed our lives
every day.**



Nothing about us without us

Or co-create so as not to bias





[View the transcription](#)

Thank you!

[Review the slide](#)



Find Emmanuelle ABOAF on [Linkedin](#)

Find Thanh Lan DOUBLIER on [Linkedin](#)

Resources (1/2)

[No, 'AI' Will Not Fix accessibility - 2023](#)

[The problem with auto-generated alternative texts for images - 2023](#)

[Disability Dongle by Liz Jackson - 2022](#)

[Introducing Be My AI \(formerly Virtual Volunteer\) for People who are Blind or Have Low Vision, Powered by OpenAI's GPT-4 - 2023](#)

[Adventures with BeMyAI - 2023](#)

[Description des images par l'Intelligence Artificielle \(IA\) du bénévole virtuel de « Be my Eyes » \(FR\) - Certam - 2023](#)

[Crédit : les dérives liées à l'intelligence artificielle \(FR\) - Les Echos - 2022](#)

[Comment l'intelligence artificielle affecte l'accessibilité des sites Web \(FR\) - 2023](#)

[Notation des allocataires : l'indécence des pratiques de la CAF désormais indéniable \(FR\) - La Quadrature du Net - 2023](#)

[IA, représentation des handicaps et accessibilité des plateformes \(FR\) - 2023](#)



Resources (2/2)

[Comment le fauteuil roulant a permis à des millions de personnes de découvrir le monde](#) (FR) - 2023

[Quand l'intelligence artificielle pilote les fauteuils roulants motorisés](#) (FR) - 2019

[La canne blanche électronique, un outil révolutionnaire pour les déficients visuels](#) (FR) - 2023

[Rango, la première canne blanche intelligente qui reconstitue l'environnement en 3D pour les aveugles, créée à Lyon](#) (FR) - 2021

[L'IA redonne la voix aux paralysés en lisant leurs « pensées » : « Près de 3 mots sur 4 ont été déchiffrés »](#) - (FR) - Le Parisien - 2023

[L'intelligence artificielle en passe de révolutionner l'audiologie](#) (FR) - 2021

[L'intelligence artificielle sert aussi pour détecter les chutes des personnes âgées](#) (FR) - 2020

[10 Best AI Tools for People with Disabilities \(Free and Paid\)](#) - 2023

[12 Best AI Tools for People with Disabilities](#) - 2024

[The Algorithm: How AI Decides Who Gets Hired, Monitored, Promoted, and Fired and Why We Need to Fight Back](#) de Hilke Schellmann - 2024

