



Inclusive Design

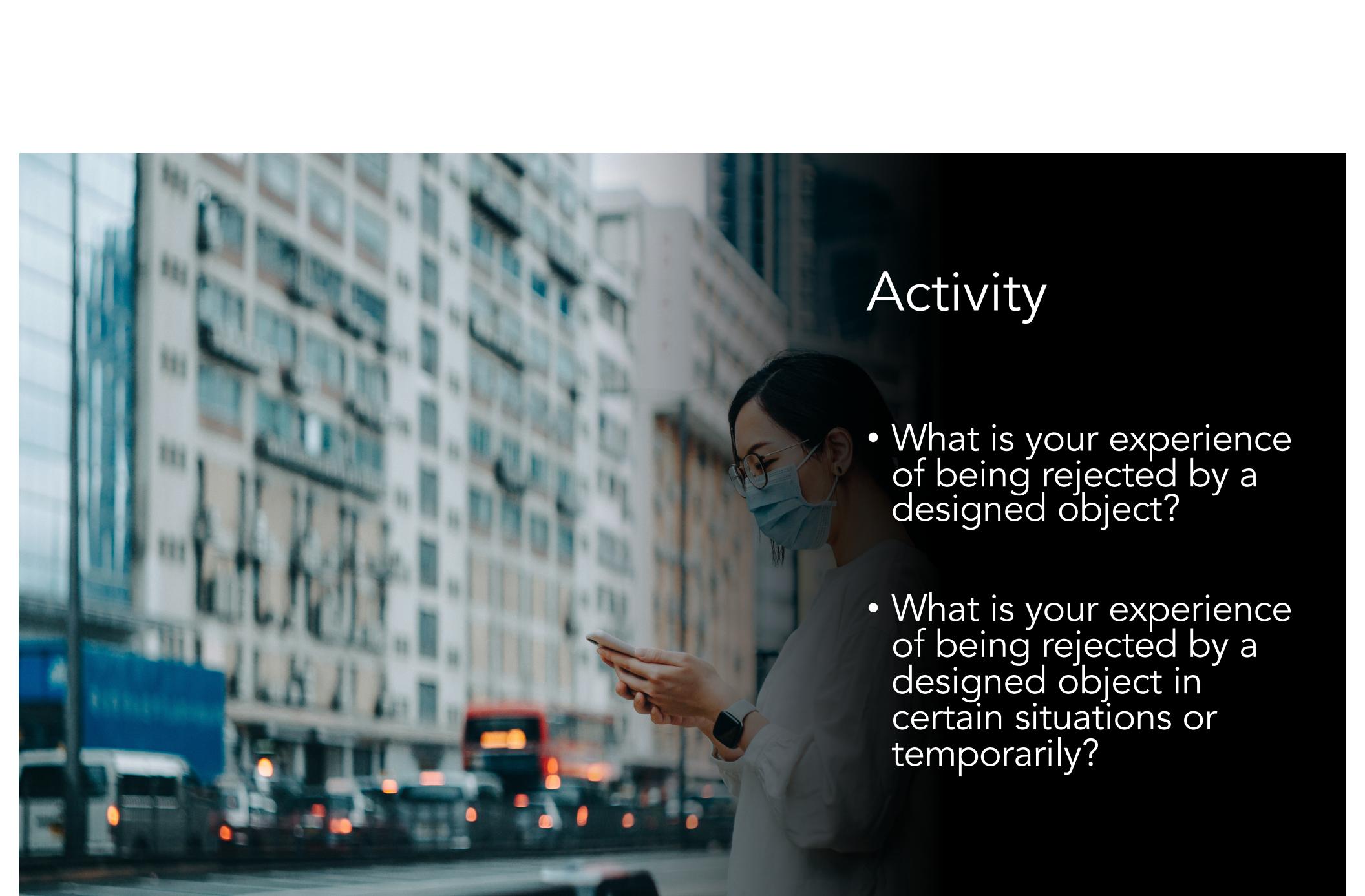
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What is inclusive Design?

Why inclusive design?

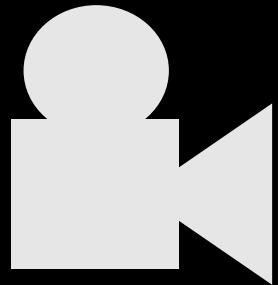
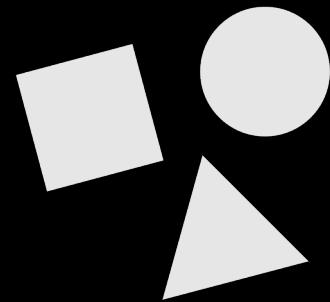
Inclusive design is design that is inclusive of the full range of human diversity with respect to ability, language, culture, gender, age and other forms of human difference.

A photograph of a woman with dark hair, wearing a white long-sleeved shirt, a blue surgical mask, and glasses. She is looking down at her smartphone. She is walking on a city street with blurred buildings and traffic in the background.

Activity

- What is your experience of being rejected by a designed object?
- What is your experience of being rejected by a designed object in certain situations or temporarily?

Design is a source of the
mismatched interactions



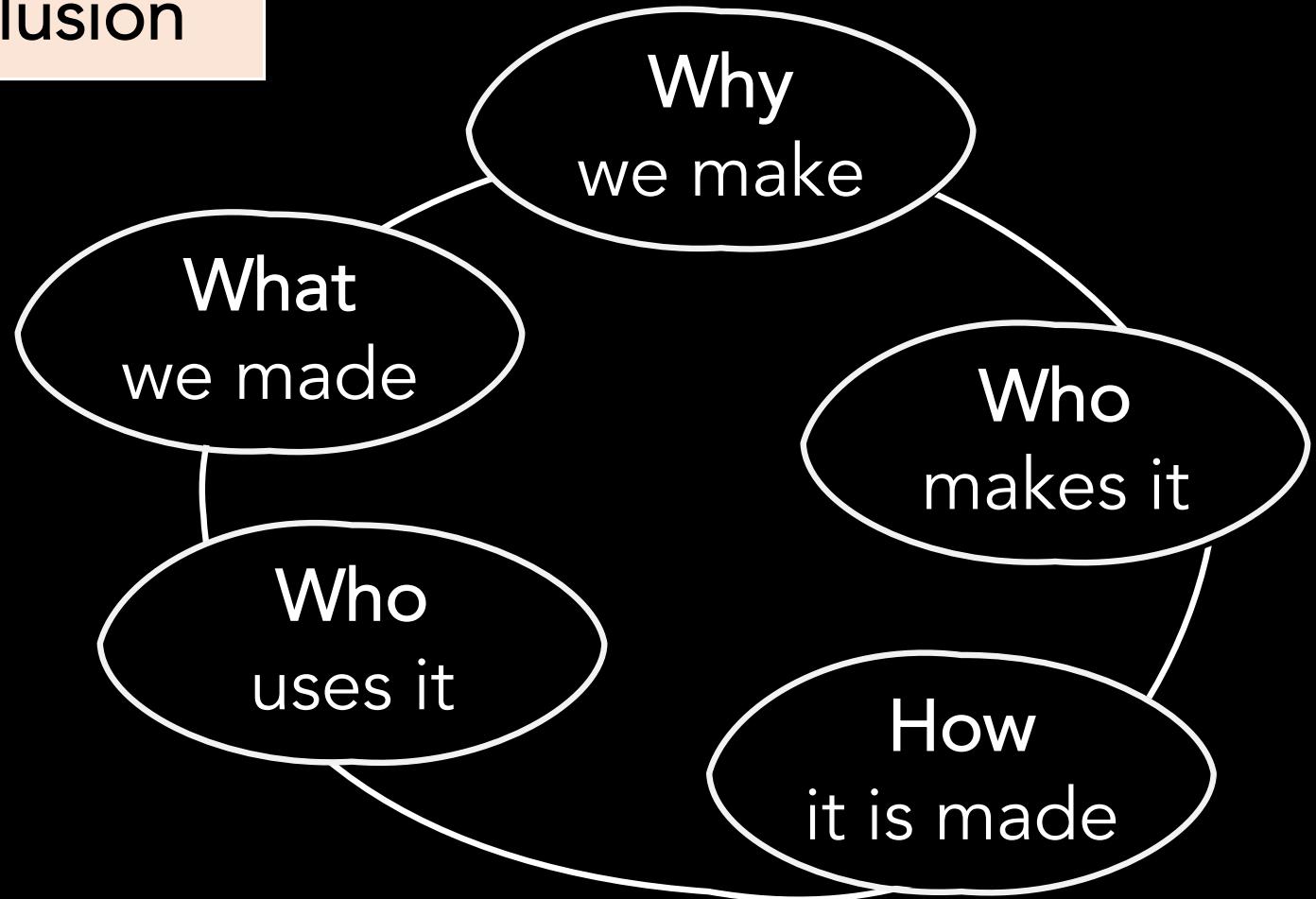
but can also be a remedy.

Recognize exclusion

Learn from human diversity

Solve for one, extend to many

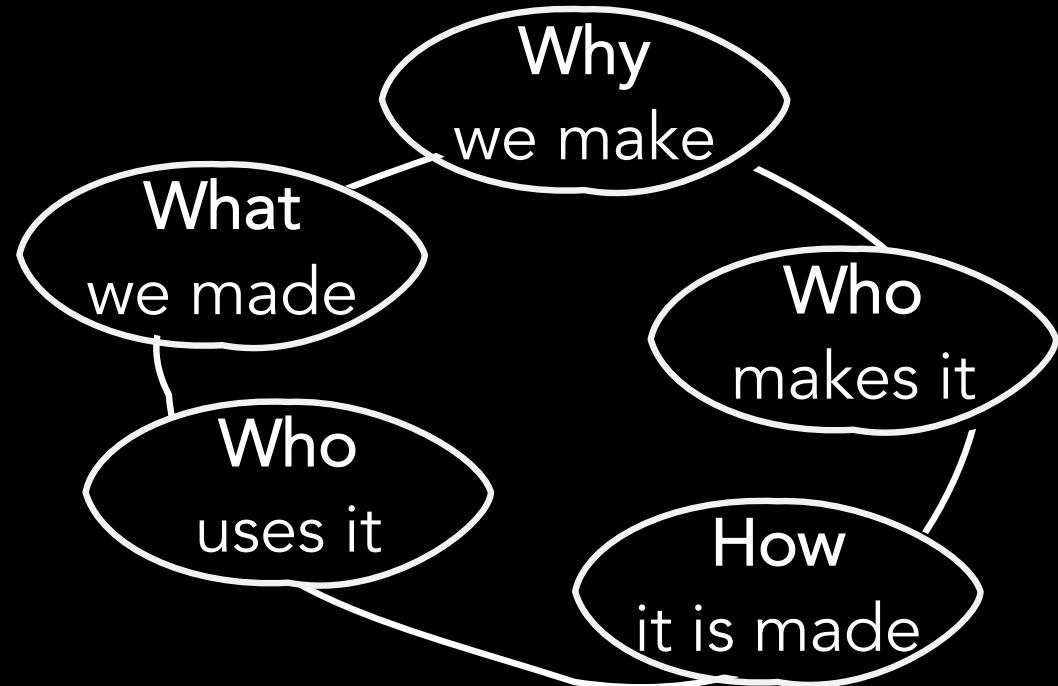
Recognize exclusion



Where can exclusion happen?

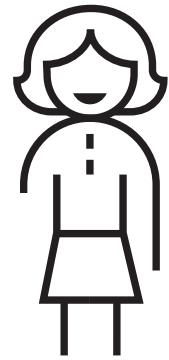
Activity

- For your case study from Assignment 1, answer as many questions as you can from the diagram.
- Identify who are excluded from the design. Consider from (but not limited to) the aspects of gender, age, language ability, tech literacy, physical ability, and specific access to money, time, and a social network.

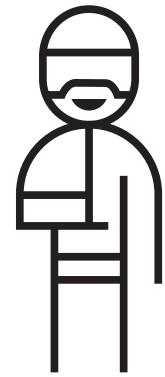


Learn from human diversity

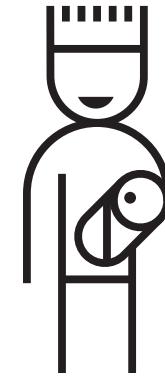




One arm



Arm injury



New parent

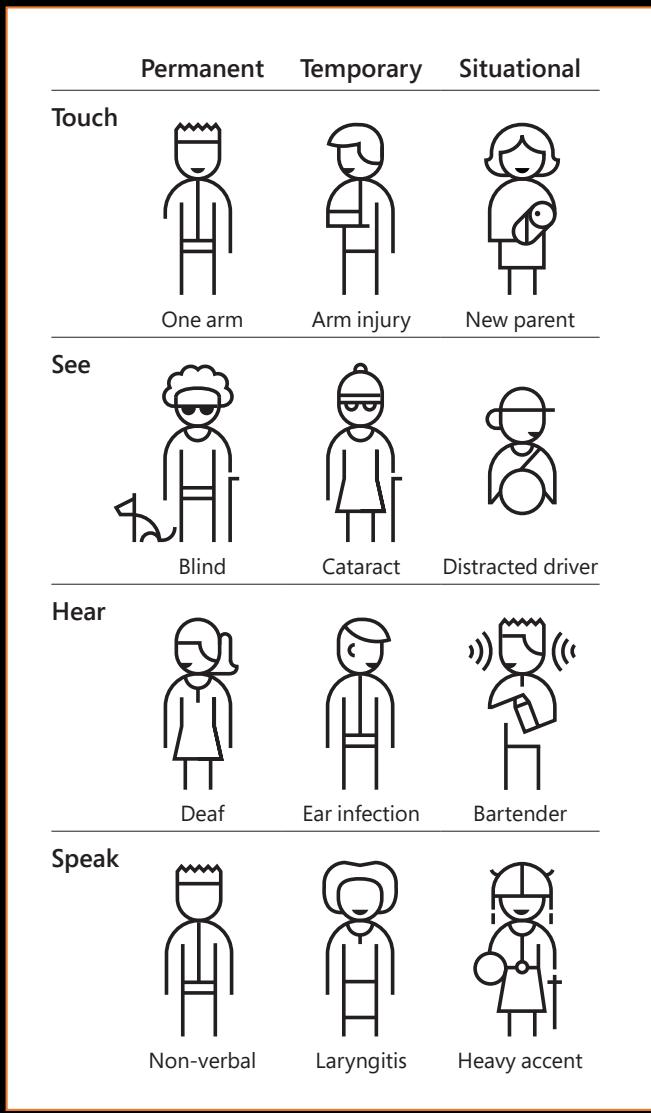
Permanent 26k

Temporary 13M

Situational 8M

Solve for one, extend to many

Microsoft Inclusive Design Toolkits
<https://www.microsoft.com/design/inclusive/>

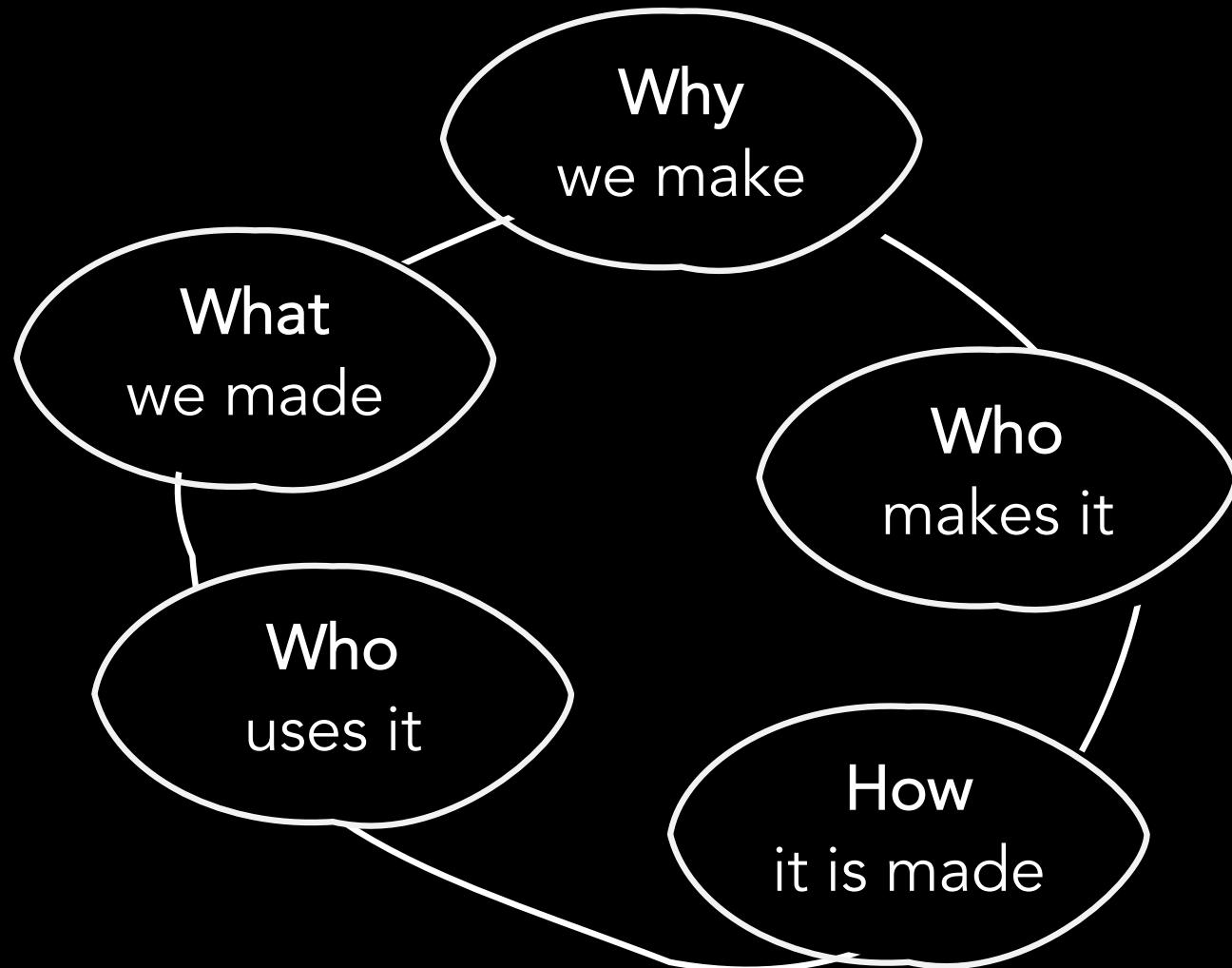


From Persona To Persona Spectrum

Microsoft Inclusive Design Toolkits
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Inclusive Design for AI?





What is the quality of this data instance for training machine learning models (text recognition task)?

Jump to page

Search

Within visual question

Within answers to visual question

Within captions

Image by filename

Filter

Reasons why answers differ:

- LQI - Low quality image
- IVE - Insufficient visual evidence - answer not present in the image
- INV - Invalid question
- DFF - Difficult question
- AMB - Ambiguous question
- SBJ - Subjective question
- SYN - Synonymous answers
- GRN - Answers present same idea in different levels of detail / granularity
- SPM - Answers are spam
- OTH - Any other reason

Skills needed by an AI system to automatically answer the visual question

- TXT - Text recognition
- OBJ - Object recognition

Image 6: VizWiz_train_00001601.jpg



Visual question: *What's in this can?*

Answers:

1. chicken noodle soup
2. soup
3. chicken noodle soup
4. chicken noodle soup weve discussed this before
5. homestyle chicken noodle
6. chicken noodle soup
7. homestyle chicken noodle soup
8. chicken noodle soup
9. soup
10. homestyle chicken noodle soup

Reasons why answers differ:

1	0	0	0	2	0	2	4	0
LQI - Low quality image	IVE - Insufficient visual	INV - Invalid question	DFF - Difficult question	AMB - Ambiguous question	SBJ - Subjective question	SYN - Synonymous answers	GRN - Granular answers	SPM - Spam

Image captions:

1. A can of Campbell chicken noodle soup that is being held by the person.
2. A hand holds a can of chicken noodle soup.
3. I see a can of chicken noodles homestyle
4. I see an arm in a green shirt holding a can of home style chicken soup.
5. Quality issues are too severe to recognize visual content.

Skills needed by an AI system to automatically answer the visual question:

5	5	1	0	0
TXT - Text recognition	OBJ - Object Recognition	COL - Color Recognition	CNT - Counting	OTH - Other

Quality issues in the image:

4	0	0	0	3	0	0	0
BLR - Blur	BRT - Too bright	DRK - Too dark	OBS - Obstruction	FRM - Framing	ROT - Rotation	OTH - Other	NONE - No issue

Text detected by: 5 / 5 annotators

More than data quality

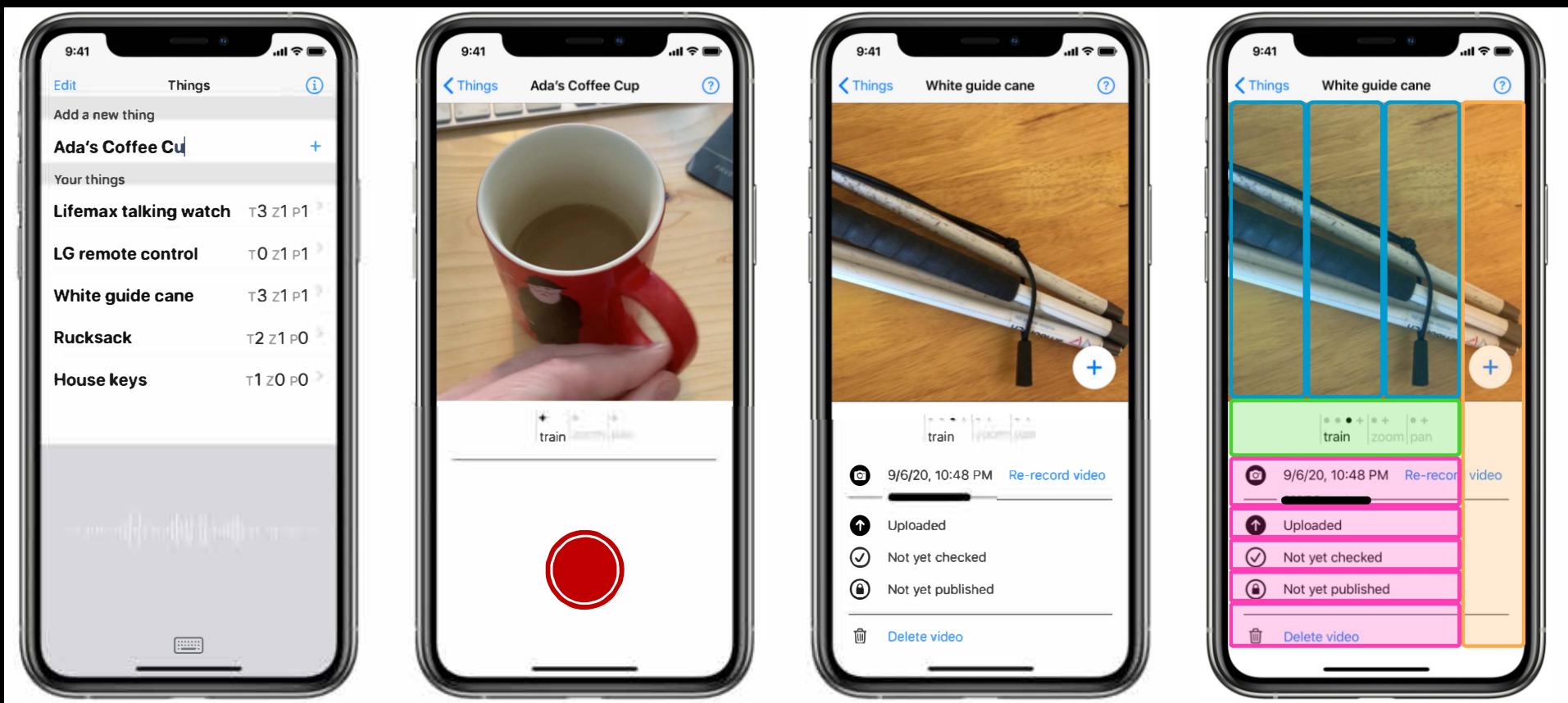


Lida Theodorou, Daniela Massiceti, Luisa Zintgraf, Simone Stumpf, Cecily Morrison, Edward Cutrell, Matthew Tobias Harris, and Katja Hofmann. 2021. Disability-first Dataset Creation: Lessons from Constructing a Dataset for Teachable Object Recognition with Blind and Low Vision Data Collectors. ASSETS '21. DOI:<https://doi.org/10.1145/3441852.3471225>

Data Collection

- Instructure
 - Are they accessible?
- What data to collect?
 - What objects?
 - How many objects?
 - What examples?
 - How many examples?

Lida Theodorou, Daniela Massiceti, Luisa Zintgraf, Simone Stumpf, Cecily Morrison, Edward Cutrell, Matthew Tobias Harris, and Katja Hofmann. 2021. Disability-first Dataset Creation: Lessons from Constructing a Dataset for Teachable Object Recognition with Blind and Low Vision Data Collectors. ASSETS '21. DOI:<https://doi.org/10.1145/3441852.3471225>



The data collection app for blind and low vision data collectors: (a) the main 'Things' screen, (b) a 'Thing' screen adding a recording, (c) a 'Thing' screen after some recording activity, (d) the same 'thing' screen marked up with the adapted information hierarchy and touch-targets of the accessibility interface.

Next on Thursday

AI principles Overview