

Christian's Research Review

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Image Accessibility for Screen Reader Users: A Systematic Review and a Road Map

Citation

(Oh, Joh, and Lee 2021)

Overview

Oh, Joh, and Lee (2021) reviewed 33 papers (using PRISMA guidelines) with two goals in mind:

1. Understand the current accessibility solutions for screen reader users to “view” images
2. Identify gaps in understanding and suggest a research roadmap

They discovered several things:

- The types of images, visual information, input devices, and feedback modalities that have been studied to assist in image accessibility on touchscreen devices
- Very little research has been done on the automation of image-related information
- Input from target users is *very* important when designing new accessibility solutions

Research Questions

Note: BLV = Blind/Low Vision

The authors had five questions for their review:

- RQ1. What types of images have been studied for image accessibility?
- RQ2. What types of image-related information has been supported for BLV people?
- RQ3. How has image-related information been collected?
- RQ4. How has image-related information been delivered?
- RQ5. How have BLV people been involved in the design and evaluation process?

Types of Images Studied

Most of the reviewed papers focused on specific types of images. Here were the main three:

Specific Image Type	Number of Papers
Maps	10
Graphs	6
Geometric Shapes	4

Conclusions

The authors came to several conclusions:

1. Image types other than maps, graphs, and geometric shapes are rarely studied
2. Only about 1/3 of the papers provide multi-modal feedback
3. The lack of an automated way to retrieve image-related information is currently an important barrier in making large-scale solutions
4. Studies should get BLV individuals involved early in the process, as their feedback is very important when making design decisions

Accessible Maps for the Blind: Comparing 3D Printed Models with Tactile Graphics

Citation

(Holloway, Marriott, and Butler 2018)

Brief Summary

Several studies were done on the effectiveness of Orientation and Mobility (O&M) training for people with blindness and severe vision impairment using 3D models. These studies seem to suggest that 3D models are preferred and more effective than the tactile equivalents for 2D graphics. 3D models can also be enhanced using interactive audio labels.

MAIN STUDY: COMPARING TACTILE MAPS & 3D PRINTS

- 3D models were preferred

Preferred format by map type, as revealed through use (neighbourhood map) or self-reporting (park maps and station plans)

map	tactile graphic	both	3D model
neighborhood	5	2	9
park	3	0	13
station	4	1	11

References

- Holloway, Leona, Kim Marriott, and Matthew Butler. 2018. “Accessible Maps for the Blind: Comparing 3d Printed Models with Tactile Graphics.” In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*, 1–13. CHI '18. New York, NY, USA: Association for Computing Machinery. <https://doi.org/10.1145/3173574.3173772>.
- Oh, Uran, Hwayeon Joh, and YunJung Lee. 2021. “Image Accessibility for Screen Reader Users: A Systematic Review and a Road Map.” *Electronics* 10 (8). <https://doi.org/10.3390/electronics10080953>.