

Preprint Accessibility

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Ensuring Access for All” at the 2021 Charleston Conference

Description

Project goal:

- To investigate the accessibility of preprint server platforms and files in order to identify accessibility issues and suggest possible remedies.

Project team:

- PI: Lisa Janicke Hinchliffe
- Graduate Assistants: Sara Ali and Mimosa Shah

What is a preprint?

- “A preprint is a non-peer reviewed scientific manuscript that authors can upload to a public preprint platform and make available almost immediately without formal external peer review.” (Kirkham et al)

Sampling

Criteria

- Self-identified preprint server
- Submissions are "open"
- English-language
- Wide range of disciplinary representation, volume of preprints, institutional hosts, and server infrastructure

Preprint Servers

- OSF Preprints (Center for Open Science)
- SSRN (Elsevier)
- ArXiv (Cornell University Library)
- MedRxiv (Cold Spring Harbor Lab)
- APSA Preprints (Cambridge University Press)

Sampling

Criteria

- Each preprint server was searched for "COVID-19"
- Webpages must not require logging in
- Webpages must be representative of the site's features, such as commenting, email and citation tools, PDF previewers

Content Evaluated

1. Homepage
2. Search page
3. Search results
4. Three preprint articles and associated downloadable files

Accessibility Criteria

World Wide Web Consortium (W3C) Web Content Accessibility Guidelines (WCAG) 2.1 Level AA (updated June 2018)

These criteria address the access needs of:

- People without perception of color
- People with limited vision and people without vision
- People without hearing
- People with limited manipulation and/or reach and strength
- People with Attention Deficit Hyperactivity Disorder
- People with learning difficulties and Dyslexia

Web Accessibility: Key Concepts

1. **Keyboard Navigation:** Can all content be navigated by people who do not use a mouse?
2. **Document Structure and Forms:** Are all content, including search tools, webforms, and buttons, consistently structured, following established web development practices, so that it can be accessed in diverse ways?
3. **Visual Presentation:** Are visuals accessible to people with seizures or color blindness? Can the visual presentation be reliably altered to suit the user's needs?
4. **Alternative Text:** Are images accessible to people who are blind?
5. **Audio and Video:** Are audio and video accessible to people with limited or no hearing?
6. **Dynamic Content and Widgets:** Are these consistently structured, following established web development practices, so that it can be accessed in diverse ways?

Methods

Qualitative assessment

Automated testing tools:

- Adobe Acrobat Pro Accessibility Check
- University of Illinois at Urbana-Champaign's Functional Accessibility Evaluator
- Google Chrome Dev Tools (Lighthouse)

Manual testing practice:

- Informed by Deque University WCAG Conformance Testing Methodology
- Each sampled webpage and PDF was reviewed twice against WCAG 2.1 AA
- Findings from automatic and manual review will be synthesized into one evaluation report per preprint server

Findings

The preprint servers varied widely. We found implementations of the latest web accessibility techniques, content with room for improvement, and inaccessible features.

Most web content tested can be navigated relatively well. Issues most commonly arising relate to:

- search tools (e.g., unlabeled filtering and faceting buttons)
- modal dialogs (e.g., hard-to-use contact or feedback forms)
- inaccessible error messages
- content only available on-hover

Findings (cont)

Low color contrast is frequently an issue, despite being easy to test and solve.

Largest area of concern – PDFs

- Many PDFs were wholly inaccessible, some were readable (excluding images), and none were fully accessible.
- Images are common in preprint PDFs and were found to be entirely lacking alt text.

Discussion

Can the library recommend a preprint over the version of record?

Quality of accessibility:

- Having alt text is not the same as having good alt text
- How much is "good enough"?

Onus of accessibility:

- Historically, ADA puts this on the individual.
- For digital content, there are four parties: the technology, the content host, the content creator, and the user.

Accessibility Expertise -- WCAG audits are detailed, complex, technical, and iterative, which is why accessibility audits get outsourced.

Institutional Repositories, although excluded from the scope of this study, may face these same issues as well.

Questions? Comments? Discussion?

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References

Jamie J Kirkham, Naomi Penfold, Fiona Murphy, Isabelle Boutron, John PA Ioannidis, Jessica K Polka, David Moher. A systematic examination of preprint platforms for use in the medical and biomedical sciences setting. DOI: <https://doi.org/10.1101/2020.04.27.063578>