Interaction Design in consideration of User Research and UX Specialist Perspectives: Artificial intelligence in UX Design, users experience in digital library and the needs of digital humanities researchers, reception of signed avatars by Deaf users

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Outline presentation

- 1. Introduction
- 2. AI Tools in UX Designer Professional Workflow
- 3. Exploring User Experiences in Digital Libraries: Wayfinding and Search Strategies
- 4. The demand for AI-based toolset for analyzing digital collections in Polish libraries
- 5. Availability of research tools and perception of sign language avatar in the Deaf community
- 6. Summary

Human — Computer Interaction



AI Tools in UX Designer Professional Workflow

Elżbieta Sroka

Article in progress



AI in UX Design Work – Opportunity or Threat?

Artificial intelligence as a support in user experience design.

Research objective:

Analyze and review of selected AI tools that can support UX designers in their work and opinions of UX designers



Research Questions:

- How do AI tools support the UX design process?
- At which stages of the design process are AI tools most commonly used by UX designers?
- What are UX designers' opinions on using AI tools?

Methods:

- Literature review (2023-2024)
- Al tools analysis
- Diagnostic Survey (Anonymous Online Survey, Time: May 27 – June 7, 2024)

Theoretical Background

"Use generative AI tools to support and enhance your UX skills – not replace them. Start small with UX tasks and beware of hallucinations and bad advice." Nielsen 2023

Theoretical Background

How AI Supports UX Designers?

- Content creation, idea generation
- Prototypes, illustrations
- Data analysis, transcripts
- Personalization, testing
- Time-saving, automation



Theoretical Background

Limits of AI

- Lacks empathy
- Doesn't conduct user research
- Misses cultural context
- Can't craft emotional stories

Al tools in UX design

- Chat GPT,
- DALL-E,
- Midjourney,
- Miro Assistant
- application plugin Figma: Jambot, FigJam,
- MagiCopy,
- FontJoy,
- Kroma,
- Poll the People,
- Uizard, Galileo AI, Framer



Reserach objective:

Opinion on AI tools in UX Design

Participants: UX specialists



Survey results

- AI tools are used and tested.
- Using tools with caution several times a week.
- Using popular AI tools such as ChatGPT (but not only)., Dall-E, Jambot.
- Using tools for various tasks (content creation, idea generation, data analysis).
- Benefits: time savings, better data analysis, streamlining work.
- Concerns: ethics, hallucinations, errors.

Exploring User Experiences in Digital Libraries: Wayfinding and Search Strategies

Elżbieta Sroka

Article in progress

Wayfinding

- User **orientation** in digital environments;
- It is knowing where you are and the way you can get there



Important are:

- User's goal, information need
- Context, signs
- Results



- Where am I?
- What can I do here?
- Where can I go next?
- How do I return to the starting point?



SIGNS, support elements:

- Paths (breadcrumbs)
- Edges (frames in the interface)
- Districts (thematic gropus of content)
- Nodes (important points if interaction, e.g. home page)
- Landmarks (icons)



SIGNS, support elements:

- Identification signs (page title)
- Directional signs (arrows)
- Informational signs / Orientation signs (you are here, section title, search hints)
- Regulatory signs (error messages)



Research Objective: To evaluate how wayfinding elements influence usability

Case study: Silesian Digital Library (dLibra 6.3.17)

Methods:

- Expert analysis of the interface
- User testing with tasks (n=10 participants)
- Pre-surveys and Post- surveys on usability and clarity



Key Findings

Strengths:

- signs and elements supports wayfinding users,
- clear layout,
- color scheme and color consistency,
- icons related to the application function.



Key Findings

Weaknesses:

- confusing filters,
- unclear labels,
- hidden functions,
- too many steps to enter the correct object.



Recommendations

- Simplify filters and terminology,
- Improve button/icon visibility,
- Highlight navigation paths clearly.



Al in Digital Libraries

Opportunities, challenges

Opportunities:

personalization and recommendation,

categorization and tagging, categorization and tagging, data analysis

Challenges:

data ethics, recommendation transparency, UX balance

The demand for AI-based toolset for analyzing digital collections in Polish libraries

Elżbieta Sroka, Krzysztof Kutt, Grzegorz J. Nalepa

Article in progress

- Digitization of collections in GLAM institutions
- Development of Digital Humanities



A New Tool for Exploring Digital Collections



Research objective: Assessing the need and usefulness of a digital collections research tool

Research tool and time: Anonymous online survey (April–May 2024)

Participants: researchers, librarians, students, general users

The survey aimed to **discover**:

- Do researchers need a new tool?
- What are the needs and expectations of users?
- What features should it offer?
- Are users open to AI in digital research?

Key needs:

Users Say: We Need Better Tools!

- No similar solution currently exists
- Tool recognized as needed
- High acceptance of AI



Current Tools in Use

What Do They Use Now?

Various tools:

Polona, Europeana, Gephi, Korpusomat, handwriting recognition, and transcription tools

Pain Points

What Frustrates Users?

- Slow performance
- Crashes and frozen interfaces
- Lost results
- Poor search quality
- Lack of personalization or intuitive UI



Expected Features

What Do Users Expect?

- Tool personalization
- Better search capabilities
- Handwriting recognition
- Al-supported data analysis



Conclusion

The Tool Needed.

- Responds to real research needs
- Supports the growth of digital humanities
- Could improve research in cultural and social sciences

The proposed tool could significantly accelerate research development in digital humanities and other scientific fields.

Availability of research tools and perception of sign language avatar in the Deaf community

Piasecki A., Irasiak A., Sroka E.

Project:

(2019-2020) Research on the possibilities of increasing the readability of speech in Polish Sign Language by an animated virtual character (**PJM Avatar**),

III open competition entitled: "Social and technological innovations in the process of activation of persons with disabilities"

State Fund for Rehabilitation of Persons with Disabilities.

https://migowisko.pl/sztukamigania/

Articles:

Irasiak Anna, Sroka Elżbieta, Górka Wojciech, Socha Michał, & Piasecki Adam. (2021). Deaf-friendly research – conducting research using an electronic questionnaire. e-mentor, 5(92), 4–15. https://doi. org/10.15219/em92.1538

Irasiak Anna, Sroka Elżbieta, Piasecki Adam (2021). Zwiększenie czytelności wypowiedzi w polskim języku migowym przez animowaną wirtualną postać. Badania użytkowników z wykorzystaniem nowych technologii. Annales Universitatis Paedagogicae Cracoviensis. Studia ad Bibliothecarum Scientiam Pertinentia, 19, 664-684. DOI 10.24917/20811861.19.40

Piasecki Adam, Sroka Elżbieta, Irasiak Anna. (2021). Możliwość zwiększenia czytelności wypowiedzi w polskim języku migowym przez animowaną wirtualną postać – w świetle badań jakościowych. Kwartalnik Niepełnosprawność: zagadnienia, problemy, rozwiązania = Disability – Issues, Problems, Solutions, I-II/2021 (38-39), 318-330. <u>https://kn.pfron.org.pl/kn/artykuly/wydania-archiwalne/nr-i-ii202138-39/610,Mozliwosc-zwiekszenia-czytelnosci-wypowiedzi-w-polskim-jezyku-migowym-przez-anim.html</u>

Deaf People:

- diversity of deaf people

"there are many ways of being deaf."

Monaghan et al. (2003)

Sign Language Avatar



36/ 📓 6:48



Research in the project

Objective:

The purpose of the research was to explore the possibility of developing a solution that would allow the presentation of Polish Sign Language (PJM) expressions by a virtual human character, including:

- evaluate the effectiveness of communicating content expressed in PJM using an animated virtual character;
- To identify the characteristics of the virtual character that contribute most to the effectiveness of the character's message;
- description of audience preferences and requirements for virtual characters;
- the possibility of using virtual characters in information systems.

3 stages of project:

- Preliminary research (research with users, methods: Anonymous online survey, in-depth interviews, participants: Deaf People, time: 06.2019; Avatar Agnieszka)
- 2. 3D model of the character and animation
- 3. Verification studies (research with users, methods: Anonymous online survey, in-depth interviews, participants: Deaf People, time: 12.2019; Avatar Michał)

Objectives in research with users:

Preliminary research: opinion on the avatar Agnieszka and information on elements for improvement

Verification research: feedback on the features of the improved artificial flashing character and to compare it with the first version (avatar Michał)

Research: Survey

Preparation of a questionnaire - accessible and useful form for Deaf people:

- making the content available in Polish and in Polish Sign Language
- comprehensibility and readability of the content
- appropriate interface
- technical work to ensure accessibility of the survey: videos with content in sign language, content structure, navigation of survey elements

Irasiak Anna, Sroka Elżbieta, Górka Wojciech, Socha Michał, & Piasecki Adam. (2021). Deaf-friendly research – conducting research using an electronic questionnaire. e-mentor, 5(92), 4–15. https://doi. org/10.15219/em92.1538

Research: Survey

Preparation of a questionnaire

- Content on one page one question = one page
- Easy navigation navigation between pages/questions
- Progress bar
- Helpful messages precise and short instructions
- Video content (enlarge/decrease window; pause/replay video); content on video
- Content layout (moving video, visibility of elements)
- Additional features (response highlighting)

One question = one page







Helpful messages





Video footage (enlarge/decrease window; pause/replay video)





Content layout



Additional features (response illumination)





Good Innovations Program: Accessible Poland - accessibility to design

Project: Accessible survey tool for the Deaf community (2022-2023)



Dostępne ankiety

Korzystając z naszych narzędzi, możesz w łatwy sposób przygotować ankiety dostępne dla osób posługujących się polskim językiem migowym.



https://ankiety.migowisko.pl/



https://ankiety.migowisko.pl/

Results of the work

- virtual character module
- a database of identified PJM sign language words/gestures allowing basic communication in PJM language
- a set of developed selected gestures enabling the functioning of the virtual character module and confirming its effectiveness

Results of the work

Awatar Michał virtual character module





Results of the work

https://migowisko.pl/sztukamigania/



O projekcie

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Państwowy Fundusz Rehabilitacji Osób

Wyniki badań



Results research with users

Perception of the avatar by the Deaf community - needs, expectations, reactions

Key findings:

- Users expect: naturalness, expressive facial expressions, smooth and PJM-compatible movements.
- Difficulties, Concerns: artificiality, lack of facial expression, difficulty in understanding.



Results research with users

- Agnieszka avatar facial expressions the worst
- Michael's avatar facial expression and body movements were positively evaluated, hand and finger size would be improved.

Ankieta								Wstecz	Dalej
Ankieta dotyc:	ząca języka	PJM							
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Agnieszka									

Conclusion

The use of virtual avatars and the inclusion of PJM-specific features can significantly improve the quality of communication and participation of this group in various aspects of social life.

Thank you for your attention