

Assistant Tools and Accessibility Features for Blind People Playing Visual-Centric Digital Games

Marco Prescher
FHV University of Applied Sciences
Dornbirn, Vorarlberg, Austria
marco.prescher@students.fhv.at

ABSTRACT

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CCS CONCEPTS

• **Applied computing** → **Computer games**; • **Human-centered computing** → **Accessibility**; • **Human computer interaction (HCI)**;

KEYWORDS

blind, accessibility, gaming, digital games, navigation, tools, AI

ACM Reference Format:

Marco Prescher. 2024. Assistant Tools and Accessibility Features for Blind People Playing Visual-Centric Digital Games. In *Proceedings of ACM Conference (Conference'17)*. ACM, New York, NY, USA, 2 pages. <https://doi.org/10.1145/nnnnnnn.nnnnnnn>

1 INTRODUCTION

Today's accessible games for blind people are mainly games which are directly developed for them (Gonçalves et al. [2]). While these games are enjoyable, mainstream games are a serious challenge for blind people because they consist of complex environments, mechanics and interactions with *Non-Player Character* (NPC) players or even real players in *Player versus player* (PvP) games.

One big step forward making mainstream games more accessible for blind people was the game *The Last of Us Part II* (TLOU2) [5, 4]. According to Leite and Almeida [3] the game company *Naughty Dog* implemented more than 60 accessibility features and is considered as the most accessible game ever produced. Additionally, Dale [1] described that the game can be played all the way through with audio cues and navigation aids. It includes preset accessibility options for common disabilities like hearing or vision impairments. It also introduces accessibility menus when the game is first started, making it easier for players with disabilities to adjust settings. To

top that, *Naughty Dog* released a remastered version of TLOU2 in 2024 with a reworked *Cinematic Audio Descriptions* feature [6].

In this work we go deeper into different and potentially new accessibility features as well as what assistant tools blind players use and how software companies implement them. This raises three relevant research questions (RQ):

- RQ1: What new breakthrough accessibility features and tools could enhance the gaming experience for blind players?
- RQ2: How can the development and implementation of these features and tools be standardized within the development cycle of visual-centric digital games?

2 THE PROBLEM

New tools for blind players and newest Accessibility Features software companies using/developing.

Screen Reader Audio Cues and Descriptions Haptic Feedback Customizable Controls Text-to-Speech and Speech Recognition Accessible Menus and Interfaces Echolocation

3 MY IDEA

Discuss your proposed idea for addressing the problem identified in the previous section. This could involve developing new assistant tools or enhancing existing accessibility features for blind people playing visual-centric digital games. Outline the key components of your idea and how it aims to improve the gaming experience for blind players. Consider addressing the following points:

The rationale behind your idea and why it is important. How your idea builds upon existing tools and features. Any innovative approaches or technologies you plan to implement. The potential impact of your idea on blind gamers and the gaming industry as a whole.

4 THE DETAILS

Provide a detailed explanation of how your idea will be implemented. This section should delve into the technical aspects of your proposed solution and address any challenges or limitations that may arise. Consider including the following information:

The specific features and functionalities of your assistant tools or accessibility features. The technologies or algorithms involved in implementing these features (e.g., machine learning, computer vision). Any hardware or software requirements necessary for your solution to work. How your solution will be integrated into existing digital games or gaming platforms. Any user testing or feedback you have conducted to validate your idea.

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Conference'17, July 2017, Washington, DC, USA

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ACM ISBN 978-x-xxxx-xxxx-x/YY/MM...\$15.00

<https://doi.org/10.1145/nnnnnnn.nnnnnnn>

5 RELATED WORK

Review existing literature and research related to assistant tools and accessibility features for blind gamers. This section should provide an overview of the current state-of-the-art in this field and highlight any relevant studies or projects. Consider addressing the following points:

Previous research on accessibility features in digital games for blind players. Existing assistant tools or software developed to improve the gaming experience for blind individuals. Studies or projects that have investigated the challenges faced by blind gamers and potential solutions. Any notable advancements or innovations in the field of accessibility technology for blind users. How your research builds upon or contributes to the existing body of work in this area.

6 CONCLUSIONS AND FURTHER WORK

What else could be done, explored deeper or would benefit blind players Summarize the key findings and contributions of your research paper. Reflect on the significance of your proposed idea and its potential impact on improving accessibility for blind gamers. Additionally, discuss any avenues for future research or development in this field. Consider addressing the following points:

A recap of the problem addressed and the proposed solution. The implications of your research for the gaming industry and

the broader accessibility community. Any remaining challenges or unanswered questions that need to be addressed. Suggestions for future research directions or enhancements to your proposed idea. How your work contributes to advancing the state-of-the-art in accessibility technology for blind individuals playing digital games.

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