

Title: Development of a Virtual in game Assistant for Video Game Accessibility for Visually Impaired and Blind Users

Context

Video games are currently the world's leading entertainment industry, yet they remain largely inaccessible to people with visual disabilities. Among recent titles, *Harry Potter: Hogwarts Legacy* presents a unique opportunity to rethink accessibility. This rich and immersive universe is particularly celebrated for its detailed visuals and varied gameplay mechanics. However, these very features pose significant challenges for visually impaired and blind players, who are unable to enjoy the experience fully.

This project aims to develop a virtual assistant leveraging computer vision to make gaming accessible to visually impaired users. The goal is to enable adapted navigation in complex environments by utilizing audio feedback to compensate for visual limitations. Using *Assassin's Creed Shadows* as a case study, we seek to demonstrate the feasibility of a non-invasive solution applicable to various titles, helping to open the doors of video game heritage to millions of players. This specific game was chosen because, while it offers robust accessibility features, it still lacks precise orientation assistance based on the on-screen compass.

Objectives: Develop a prototype enabling visually impaired users to interact with the game through a fully external assistant. The script should recognize certain visual labels (main mission markers, distance indicators...), track them within the game's visuals, and provide text-to-speech guidance using this information.

Methodology: Collaboration with Mehdi Smael Berahal, co-founder of the LudAccess association. Opportunity to test the solution with visually impaired individuals to identify possible audio feedback options and precise user needs.

Technological Development: Utilize computer vision to interpret the game's visual navigation elements (see illustrations on the next page). Create audio feedback mechanisms to guide the user effectively.

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