North South University

Department of Electrical & Computer Engineering

Spring 2024

Faculty: Nova Ahmed (NvA)

Course: CSE323 Operating Systems Design
Section: 01

Speak & Play: Voice-Controlled Gaming for Everyone

Project Proposal
Submitted by

Nafis Forkan	2111492642
Yasef Ahnaf Shonon	2021049642
Siam Masud	2011057642

Abstract:

Our project aims to enhance accessibility in gaming for people with disabilities by utilizing voice commands for character control. Through a mobile app, users can issue commands via voice, which are then recognized and transmitted to a PC game environment via Bluetooth. The PC interprets these commands as keyboard inputs, enabling character movements. By leveraging voice recognition technology, we aim to provide an inclusive gaming experience, allowing individuals with mobility impairments to enjoy video games and other controller-based applications. This initiative not only promotes inclusivity in gaming but also opens avenues for broader accessibility in digital interactions.

Method and Design:

The method involves a multi-step process integrating both software and hardware components. Initially, we will develop a mobile application compatible with Android devices. This app features a user-friendly interface and incorporates a voice recognition system utilizing APIs such as Google's Speech-to-Text. The app accesses the device's microphone to capture voice commands spoken by the user. These commands are then processed in real-time, converting speech into text.

Simultaneously, on the PC side, we will develop a custom software module. This module establishes a Bluetooth connection with the mobile device to receive the text-based commands. Upon receiving a command, the software interprets it as specific keyboard inputs corresponding to character movements in the game.

The design ensures seamless communication between the mobile app and PC software, prioritizing low latency and high responsiveness. To achieve this, efficient data transmission protocols are employed over Bluetooth, and the PC software is optimized for rapid interpretation of received commands.

Moreover, the system is designed with flexibility in mind, allowing users to customize command mappings according to their preferences or specific accessibility needs. This customization feature enables users to tailor the control scheme to accommodate varying levels of mobility impairment.

Additionally, user feedback mechanisms are integrated into both the mobile app and PC software to facilitate continuous improvement and user satisfaction. These mechanisms include options for users to report issues, suggest enhancements, or provide general feedback on their gaming experience.

Overall, the method and design prioritize accessibility, responsiveness, flexibility, and user feedback to create a robust and user-centric system for controlling

in-game characters via voice commands, thereby enhancing the gaming experience for individuals with disabilities.

Conclusion:

In conclusion, our project will offer a groundbreaking solution to enhance accessibility in gaming for individuals with disabilities. By utilizing voice commands and Bluetooth technology, we will develop a user-friendly system that allows users to control in-game characters seamlessly. Customizable command mappings and user feedback mechanisms will ensure adaptability and continuous improvement. Through this initiative, we aim to break down barriers to gaming accessibility, empowering individuals with mobility impairments to fully engage in gaming experiences. Moving forward, we envision further advancements in inclusive design and technology, creating more opportunities for participation and enjoyment in the gaming community.

References:

EA: Our Patent Pledge for Increasing Accessibility

Patent: Custom voice control of video game character (US10926173B2)