

Speech-Based Game Playing

This presentation explores a project focused on creating a speech-controlled game, improving accessibility and interaction in gaming.

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The Challenge: Access for All

Limited Accessibility

Many games rely on keyboard or joystick inputs, excluding players with disabilities from fully enjoying the experience.

Our Goal

This project aims to develop a speech-controlled game, enabling players to control classic Atari-style games using only their voice.

Our Approach: Building the System

Research speech recognition and game integration to understand existing technologies and potential challenges.

1

Develop a basic game using Python, utilizing libraries like Pygame, or the existing gaming environments available in OpenAI Gym.

2

Integrate a speech-to-text system using libraries like Google Speech API, Vosk, or CMU Sphinx to convert spoken words into text.

3

Map recognized voice commands to specific game controls, ensuring accurate translation of speech to actions.

4

Test usability and accuracy with user feedback to identify areas for improvement and refine the system.

5

Evaluate system performance based on factors like accuracy, latency, and overall user experience.

6

Speech Recognition: The Key

Speech-to-Text

Utilize speech recognition technology to convert spoken words into text, enabling the system to understand player commands.

Accuracy and Latency

Ensure high accuracy and low latency in the speech recognition process to provide a seamless and responsive gaming experience.

Game Integration: Mapping Actions

Voice Command Mapping

1

Establish a clear mapping between recognized voice commands and specific game actions, enabling the player to control the game with their voice.

Intuitive Controls

2

Ensure that the mapping of voice commands to game actions is intuitive and consistent to minimize learning curve and maximize player enjoyment.



User Feedback

Usability Testing

Conduct extensive usability testing with diverse users to gather feedback on the system's functionality and ease of use.

Accessibility Evaluation

Evaluate the system's effectiveness in promoting accessibility, identifying potential barriers and exploring solutions.



Prototype and Outcomes

1 Functional Prototype

Develop a fully functional prototype of a speech-controlled game, demonstrating the feasibility of the concept.

2 Insights and Improvements

Gain valuable insights into usability, accessibility improvements, and potential future enhancements based on user feedback and testing.



Future Plans

Sound Intensity Recognition

Implement algorithms to recognize the intensity of the voice, so that we can implement the program on a wider range of games.

Adaptive Difficulty Levels

Introduce adaptive difficulty settings that adjust based on player's skill level and input method, insuring an engaging experience for all the users.

Community Feedback Loop

Establish a feedback mechanism to continuously gather insights from users, ensuring that future updates and features align with needs and preferences.