|  |  |  |
| --- | --- | --- |
| Drawback | Existing Results | Future Scope |
| Blind users | No solution for  this problem [23] | haptic feedback for touch-based devices |
| Available in  English | Not available in  other local  languages [24] | User-Selected Language |

Table 1. Drawbacks of Text-Based CAPTCHA

haptic feedback for touch-based devices

* Implement haptic feedback for touch-based devices.
* Blind users can feel patterns or vibrations that correspond to characters.

User-Selected Language

* Allow users to select the language they are most comfortable with for the CAPTCHA challenge.
* This ensures that users can choose a language they are familiar with while still introducing diversity.

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| --- | --- | --- |
| Drawback | Existing Results | Future Scope |
| Require large  image database | No small database  provides high  security [25] | Cloud-Based Image Storage |
| Blind users | No solution for  this problem [25] | Guided Assistance |

Table 2. Drawbacks of Image-Based CAPTCHA

Cloud-Based Image Storage

* Utilize cloud-based storage solutions to store and retrieve CAPTCHA images.
* This approach can provide scalability and reduce the need for extensive local databases.

Guided Assistance

* Implement a guided assistance feature that provides step-by-step instructions for completing the CAPTCHA.
* This can be especially helpful for users who may need additional guidance.

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| Drawback | Existing Results | Future Scope |
| Available in  English | Not available in  other local  languages [24] | User-Selected Language |
| Deaf users | No solution for  this problem [24] | Text Display |

Table 3. Drawbacks of Audio-Based CAPTCHA

User-Selected Language

* Allow users to select the language they are most comfortable with for the CAPTCHA challenge.
* This ensures that users can choose a language they are familiar with while still introducing diversity.

Text Display

* Display the spoken characters or instructions as text on the screen.
* Users can read the text and input their response without relying on audio.

|  |  |  |
| --- | --- | --- |
| Drawback | Existing Results | Future Scope |
| Large size of  video | No solution to  solve this problem  [26] | Use of Thumbnails |
| Blind users | No solution for  this problem [26 | Voice Commands |
| Video’s speed | No solution for  this problem [26] | Use of Thumbnails |

Table 4. Drawbacks of Video-Based CAPTCHA

Use of Thumbnails:

* Instead of embedding the entire video, consider using a thumbnail that, when clicked, opens a more compressed version of the video.
* This reduces the initial load size for users.

Voice Commands:

* Allow users to interact with the video using voice commands. For example, users could say a specific word or phrase related to the content.