ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun260

Development of a Mobile-Based Vision Assistant Application for the Visually Impaired

Christian Albarico[1]; Aileen Arpon[2]; Nyvein Clark Pareja[3]; Ivy Mae C. Precinta[4]; Rino M. Rebotazo[5]; Cedie E. Gabriel[6] & Reginald S. Prudente[7]

[1, 2, 3, 4, 5, 6, 7] College of Information and Communication Technology, South East Asian Institute of Technology Incorporated, 9505 Crossing Rubber, Tupi, South Cotabato

Publication Date: 2025/06/06

Abstract: This paper introduces the design and evaluation of a mobile vision assistant application for visually-impaired users. Powered by speech-to-text, text-to-speech, object detection, and emergency communication capabilities, the system targets issues of cost and availability facing rural and less economically advanced regions. Based on the Model Human Processor, the app was evaluated using qualitative methods, including semi-structured interviews and usability tests with visually impaired users. Findings suggest high satisfaction with the functionalities of the system, reliability, and the easiness of use, particularly for the stressful emergency situation. The contribution of inclusive mobile technology to increasing autonomy and quality of life of the blind. The experience of the project shows this is a valid expectation: this pilot has shown, in fact, that inclusive mobile technology has the potential of increasing the autonomy and the quality of life of the blind in their everyday activities, improving the access to information and services.

Keywords: *Mobile Vision Assistant, Visually Impaired, Accessibility, Inclusive Technology, Emergency Communication, Usability Testing, Speech Recognition, Object Detection.*

How to Cite: Christian Albarico; Aileen Arpon; Nyvein Clark Pareja; Ivy Mae C. Precinta; Rino M. Rebotazo; Cedie E. Gabriel & Reginald S. Prudente (2025). Development of a Mobile-Based Vision Assistant Application for the Visually Impaired. *International Journal of Innovative Science and Research Technology*, 10(6), 1-11. https://doi.org/10.38124/ijisrt/25jun260

I. INTRODUCTION

➢ *Background and Context*

The mean number of blind and visually impaired among the 395 mln was 285 unable to navigate. Some mobile apps like those for OCR, voice, camera navigation (just to mention a few) are expensive for the end user and have a limited use. Voice commands applications: Blind Assist for voice-based help in small tasks. System have evolved for accelerating real-time object detection for tracking scope of movements using YOLOv3.

But there's still a lack of one-stop-shop mobile app for all of these categories at an affordable price. This thesis is intended to be a research endeavor that recognizes the need and overcomes that deficiency, by offering a mobile blindness application (App) which contains the vision assistant, multi-functional obstacle recognizer, space scanner, as well as the audio guide. Around 340,000 blind individuals in the Philippines could have benefited from such assistive technology as the most common navigational assistance for the blind is a white cane which is limited in distance and requires constant touch on the navigation surface.

A recent paper by Bermudo et al. (2019) by De La Salle University, Manila has an attached assistive utility using ultrasonic sensor to check the hardness and dimensions of the surrounding objects. The locally developed prototype "shared remarkable similarity" with the conventional white stick in search tests in bedroom and back yard with extremely limited speedups (in both cases significant over 0 s). In Region XII, although technological aid devices are scarce, the blind do not yet have the facility to move independently in the spaces. But even though there are national, legislative standards of digitalization inclusion – this wasn't known to local research and eye help, or so it might appear. A lack of locally available publications limits cost-effective, applicable and culturally appropriate assistant device design. Therefore, this lack of understanding must be paid close attention to for adequate research on the development, development and interaction with the assistant mobile gear technology according to the infrastructure, population literacy and economic conditions of Region XII.

➢ *Research Problem*

Many are blind and the rest have poor communication skills and getting along together is hard for them. Or, existing assistive technologies are too expensive, or they

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun260

can't be adapted to local needs. Further, very low Internet access, no knowledge on what was available and financial constraints exacerbate these challenges. Some apps utilise advanced technologies such as voice or object recognition, but they are rarely combined into a single app and are unsuitable for conditions in Region XII. This paper aims to design and develop a mobile application that can detect object, operate by using voice commands and to support emergency messages, allowing users to walk safely, communicate more and get help.

➢ *Research Questions and Objectives*

- *Research Questions*

✓ How effective do speech-to-text and text-to-speech assist a mobile-based vision assistance system to enhance usability for the visually impaired in live interaction?
✓ What is the performance of the AI assistant's emergency-calling feature in terms of the automatic contacting of emergency contacts in simulated emergency situations?
✓ What is the performance in terms of response time and success rate of the emergency system for the alert notification to designated guardians?

- *Research Objectives*

✓ To assess the use and performance of speech-to-text and text-to-speech features in a real-time, mobile-based VPA (Vision-Personal-Assistant) to facilitate interactions by visually impaired (VIP) subjects.
✓ To evaluate the sensitivity and specificity of the emergency calling system in notifying assigned guardians in a timely manner.
✓ To evaluate the time of response and the efficiency of the alert system in the guardians in case of emergencies.

- *Justification and Significance*

This research work is useful for the SANDRY as it helps the visually impaired persons to solved their mobility and communication problem. They can send emergency messages, convert text to speech, and detect obstacles with mobile visual assistant app. The common daily tasks will be safer and easier for people in area XII in order to utilize this application, which do not have less access to these devices.

II. LITERATURE REVIEW

➢ *Overview of HCI Theories and Models*

HCI is human-computer interaction is for improving and making offerings of user experiences in the area of interactive systems. Human computer interaction is a slowly growing relationship between humans and computers. While the performance of the system is strongly influenced by the user experience, an effective user interactive system can hardly be implemented without a proper human-computer interaction. The man-computer interaction relies on the understanding of human abilities and limitations. Developers collaborate and discuss with researcher about how-to theorize to develop an interactive systems to match a user's mental model. Developer integrate cognition into interactive systems using the Human behavior, its system features: responsive, user-friendly UI, which make the system more interactive, sound, lovely to the user, color and harmony to access graphics and interactive system, and all this may be impact on user experience. e-applying principles of user-centred design. In this way the human computer interaction is developed so that the clients having to access the computer system puts it to use, and user experience in the new interface is enhanced. (Pushpakumar R,. et. al. 2023).

The Model Human Processor (MHP) is the main theoretical background for this work. Human-Computer interaction is broken down by the Card-Moran-Newell framework, called the model human processor, into three interacting systems-the perceptual system, the motor system and the cognitive system. Each of these systems is paired with memories and with processors, and together these help account for the way in which human beings produce, interpret, and respond to information.

In particular, the theory is relevant to the context of a mobile vision assistant for visually-impaired users, as it describes how users process sensory information and complete tasks with technology. The perceptual system of MHP corresponds to the way visually impaired users make use of auditory input (e.g., text-to-speech) and the motor system corresponds to the way they give voice or gestural commands. The cognitive system describes how users structure information and arrive at decisions.

By leveraging this theory, designers are able to organize the device in such a way that mirrors natural, human processing and as a result, increases efficiency, speed, and precision in real-time interaction. It helps to ensure the system is not just functional, but favours an intuitive and efficient way of enabling visually impaired people to make use of it, particularly in emergency or complex spatial situation

➢ *Review Recent Studies, Papers, and Advancements in HCI*

Mobile Apps for Visually Impaired: A Survey published in 2024, these papers focused on the review of existing mobile apps for blind and visually impaired in the areas of navigation & way-finding, object identification, text-tospeech (TTS) and social interaction. In brief, the system includes navigation, object recognition, text to speech and social interaction. The app uses it to aid the visually impaired people. So the systems think that mobile technology must continue developing to get well-adopted in the blind life. (Naotunna,S and Hettige,B,. 2024)

Recent improvements in HCI focus largely on inclusive and assistive technologies. Developments in artificial intelligence (AI), machine learning (ML), and real-time feedback systems have all been integrated more recently to enhance the quality of interaction for users with disabilities. For example, vision assistants with built-in AI

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun260

can provide better object-detection and contextually aware voice activation, allowing more independence for the user.

There are some works done to see how to elate these users' experience using this kind of interfaces 5, 25,406, 481. These technologies are designed to close the sense gap, enabling multimodal interaction, now a days is one of the most important concepts to provide accessibility in mobile applications.

These results can be used to justify the design of mobile-based HCI systems for the visually impaired allowing them to be more independent and innovative showing a movement toward user centred, inexpensive and culturally adaptable digital solutions.

- *Read for Me:*

Developing a Mobile Based Application for Both Visually Impaired and Illiterate Users to Tackle Reading Challenge.

In the recent years, various reliefs have been worked out to guide the visually impaired and the illiterate to get rid of the reading impairment by means of a number of custom-designed applications. Yet, a large number of these applications rely on physical button pressing and do not involve the use of touchscreen devices. The primary purpose of the present research is to develop an application with a touchscreen which is capable of assisting both visually impaired and illiterate people to read text on a surface. The study also seeks to investigate whether it is feasible to develop an application which would be accessible for the two groups of users and whether both would use it to the same extend. So, a requirements elicitation analysis was implemented in order to determine the users' needs and so to construct an interactive interface for visually impaired and illiterate users. This research led to a number of design considerations, including voice prompts, sound-based feedback, and a lack of buttons necesario. The design preferences were then used in the development of the reader mobile application. Then, an evaluation experiment was performed to assess the usability of the developed application. The findings indicated that sight and reading impaired also can profit from the same mobile application, and they were satisfied by using it as well as efficient and effective. But measurements from the evaluation sessions also indicated, that illiterate users could use the develop app more efficiently and effectively. And they were more satisfied – particularly with how easy it was to use the app. (Alfayez Z. et al., 2023)

- *Development of Mobile App to Support the Mobility of Visually Impaired People.*

The global number of individuals of all ages visually impaired in 2017 is estimated to number three hundred and twenty-one million; of whom thirty-six million are blind. Several new transport technical solutions already exist to transfer these people. There, the next big hurdle for the technologically-inclined is to offer cost-effective solutions. One potential issue for users with visual impairments is the relative ease of moving around in unfamiliar surroundings, avoiding obstacles and moving from one place to another with confidence and in safety. A mobile app solution is proposed and the app can be installed into android mobile. The app will render the scene through wearable cams and the blind directly to the scene. The proposed system is operated predominantly with the YOLO3 program and used in detecting and locating distance between objects and camera. It also indicates the position of the object. At last, the system voice will command to guide/inform the visually disabled to move on the nvironment. Globally it is pioneering. The proposed method is cost-effective and can be used by poor and rich sections of society. (Meenakshi R.et al., 2022)

- *Analyze Existing Solutions Related to the Research Problem*

The reviewed materials indicates that the problems-communication, living, assistive devices are too expensive and the existents are not age appropriate to the patients in local and not for non-adult people and this is due to a lack of information facility. So by considering the challenges mentioned above this mobile based vision assistant which have facility of converting text to voice, speech recognition accuracy, telling notification for guardian, with this it can also helps in boosting the confidence of visually impaired people should be a solution. (Naotunna,S and Hettige,B,. 2024).

In response to these limitations, the envisioned mobile based vision assistant is developed as a generalized tool. It incorporates text to speech output, precise speech to text input and immediate emergency alerting to caregivers. By combining these functionalities into a user-friendly application, the system adds mobility, safety, confidence, and independence for visually impaired users.

- *Mobile App Accessibility for Visually Impaired*

Innovation of technology along with the advancement in android and IoS operating systems has enabled our daily life in order to revolve around the smart phones. Success criteria for mobile technologies and their applications must exhibit the capability to cover the requirements of all human beings including visually impaired individuals. Mobile Apps can now be easily deployed and executed on the Mobile devices due to the creative innovation in the Mobile Technology. like Text-to-Speech, navigation aids, object recognition, color recognition, speech recognition etc., are become part of the basic mobile services. It is also that providing the user-friendly user interfaces and a complete voice recognition system for visually impaired people. As such, the objective of this paper is to highlight and review the most recent advances in mobile technologies, and mobile apps developed in order to restore the spark and contentment in the lives of blind individuals. Based on the perspective acquired through the study, we present an agenda for future research in mobile application and interaction design for visually impaired and blind users. (Sayal R. et al. 2020).

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun260

III. METHODOLOGY

➢ *Research Design*

The purpose of this study was to investigate the effectiveness of a mobile application-based vision assistant for the visually impaired. A qualitative research design was chosen to capture the experiences of the users in this study. Such research was conducted using interviews and user-testing, to explore areas including user experience, engagement and perceived effectiveness. Through this qualitative approach a better understanding was gained of how users interacted with the application and what could be improved.

➢ *Participants*

Participants in total, eight (8) persons with vision impairments participated in this study. Participants were purposively recruited for the willingness and capacity to provide informed feedback on the usability of the mobile app. The panel participants spanned different age groups and degrees of blindness in order to get multiple perspectives. Recruitment included rural and urban respondents, and, therefore, a global impression regarding the accessibility and utilisation of the system was obtained. Their firsthand experiences provided insight on the actual utility of the vision assistant.

➢ *Data Collection*

This experiment used visually impaired participants in different settings. Users were recruited to discuss their experiences with the mobile vision assistant in one-on-one interviews and usability sessions. The authors collected in depth feedback on user satisfaction, perceived usefulness and encountered problems, via qualitative interviews. This feedback was invaluable for pinpointing areas that were missed and for guiding future refinements of the application.

Participants were recruited using snowball sampling. This approach had the advantage of recruiting from a hard-to-reach population, as initial participants recommended friends to participate, who had similar conditions. This was a way to let the sample size build up naturally and to be inclusive.

➢ *Data Analysis*

The data were qualitatively analyzed using thematic analysis. Interviews and usability sessions were transcribed and coded to look for common themes and emergent patterns around user experience, usability issues, and how to improve the games. The researcher attended to repeated issues, emotional reactions and pivotal events across the participants. This analysis was instrumental in determining the mobile app was what the users both wanted and needed and also eventual provided a solid basis for further optimizing the mobile application based on actual user feedback.

➢ *Ethical Considerations*

The subsequent research guides this study in terms of the user rights and the privacy.

- Informed Consent: Participants should be provided with the information regarding a study and sign consent prior to the study.
- Anonymity and Confidentiality: The personal information will be made anonymous and the response will be kept confidentially.
- Withdrawing: Participants have the right to withdraw from the study, at any time, without consequence.

These ethical guidelines will enforce the initial ethical title of the work on the survey, because ethical use will allow for a behavioral treatment of the low net users during the whole survey phase.

IV. ADVANCED SYSTEM DESIGN

➢ *System Architecture*

The system architecture of Vision Assistant is developed at multiple levels, enabling intuitive user interaction, smart processing, assisted services, and emergency support for users those in need of accessibility and safety support.

- *UI (User Interface) Layer:* A user-friendly text-to-speech, speak-to-text, emergency message, calling and image-to-text features.
- *Application Logic Layer:* Handles commands, including voice to text, photo capture, and emergency commands.
- *Functionality Control Layer:* Manages the system functionality such as input, speech settings, text conversion, and communication.
- *Communication & SOS Module:* Manages SOS messages and calls for prompt assistance.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun260

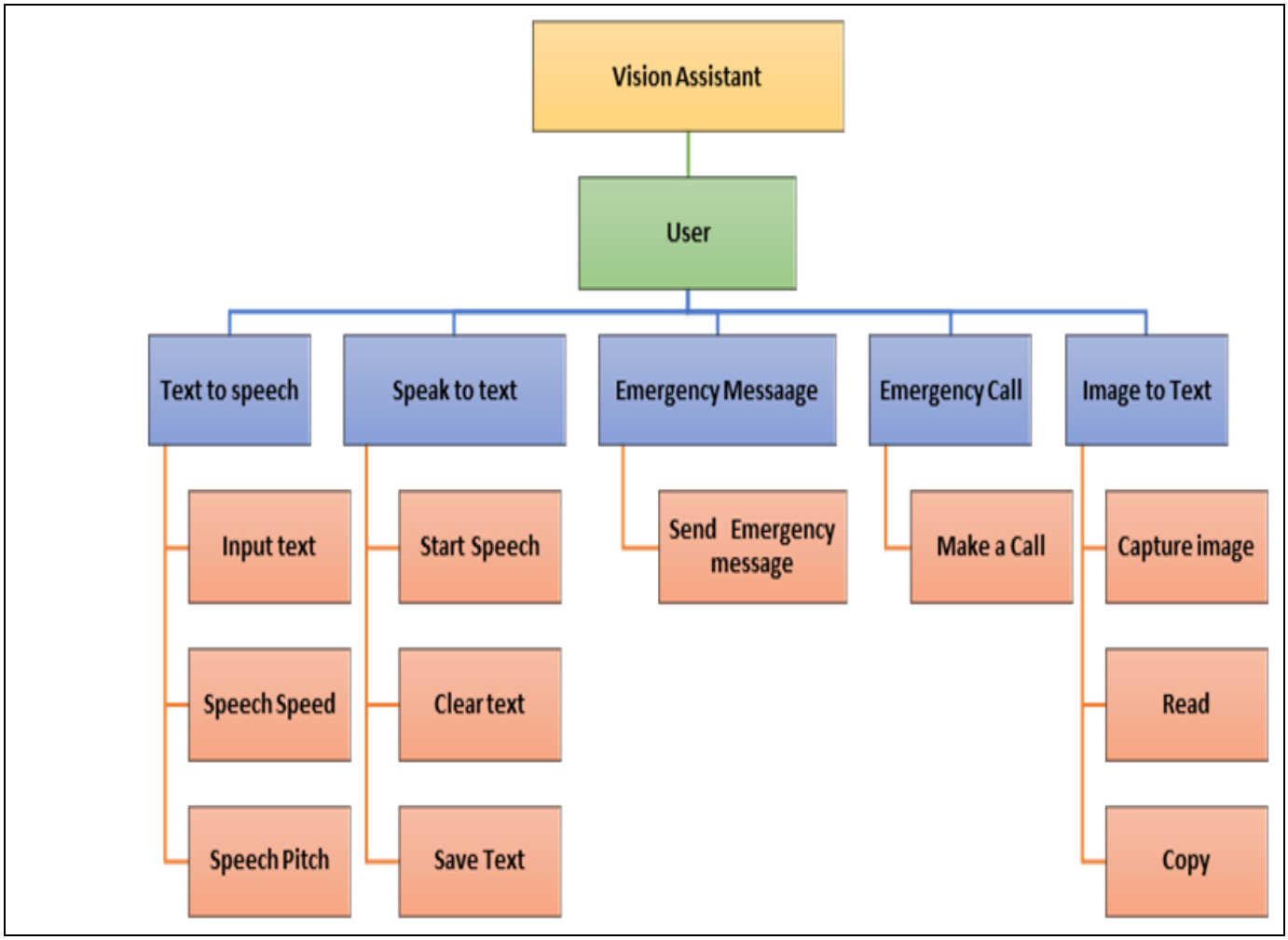

Fig 1 The Diagram Outlines a Development of a Mobile-Based Vision Assistant Application for the Visually Impaired.

➢ *Features and Functionalities*

Development of a Mobile-Based Vision Assistant Application for the Visually Impaired The features and functionalities of Development of a Mobile-Based Vision Assistant Application for the Visually Impaired are as follows:

Text to Speech You can input text the user would like spoken out loud with "Input text" as well as speak rate with "Speech Speed" and how high or low the voice is with "Speech Pitch".

Speak to Text The "Start Speech" feature allows the user to start voice input (to be transcribed back to text), "Clear text" will remove the currently transcribed text and "Save Text", which saves the transcribed text for later use.

Emergency Message The user can use the "Send Emergency Message" function to send a pre-set message to his emergency contacts in case of an urgent situation.

Emergency Call One tap for “Make a Call,” which instantly calls an emergency contact.

Image to Text The “Capture image” function allows the user to set the camera to take a photo and retrieve text from it, whereas “Read” listens to the extracted text and “Copy” allows the user to copy the text for future use.

➢ *User Interface Design*

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun260

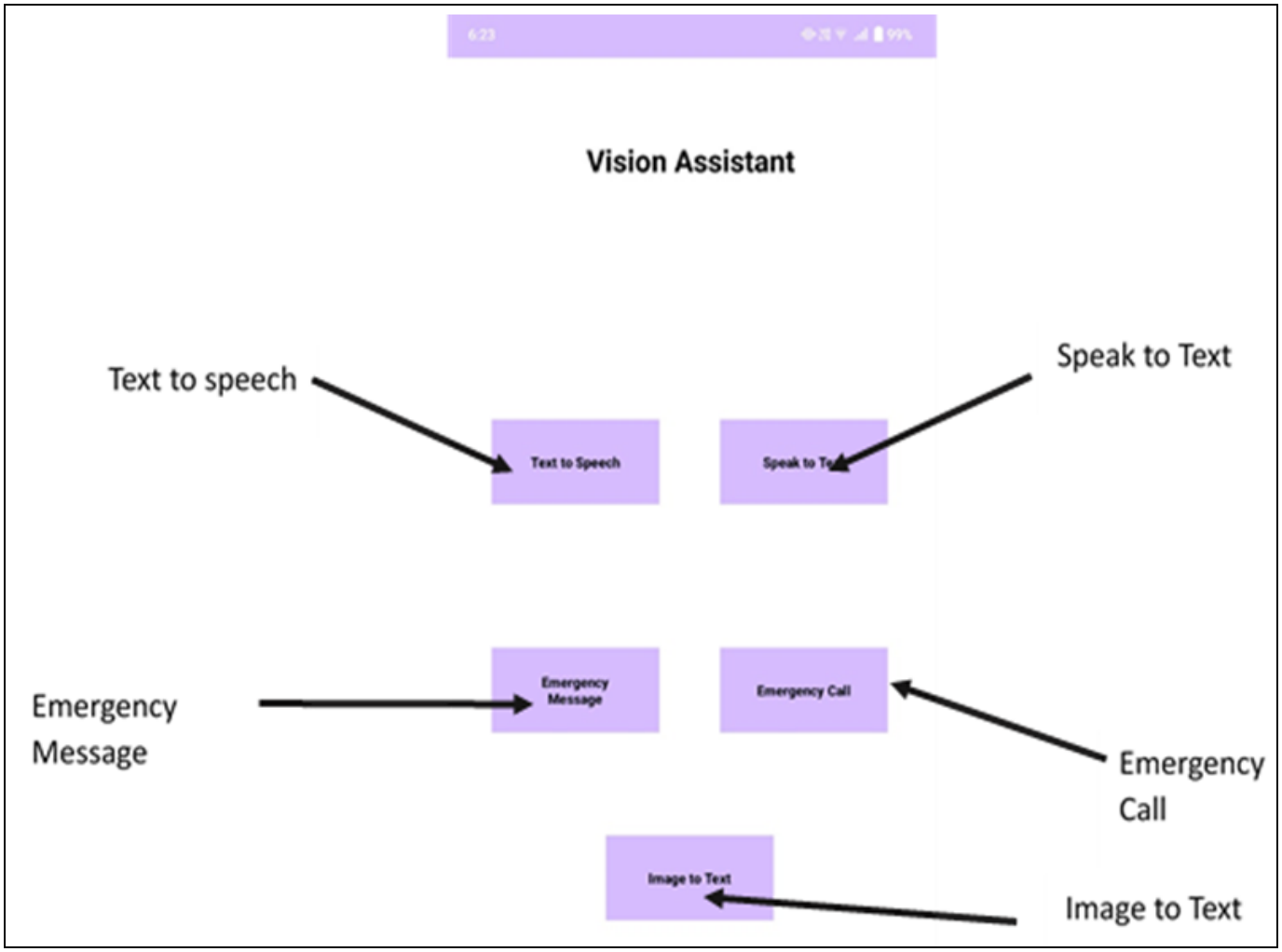

Fig 2 Dashboard of Vision Assistant: A Mobile App for Enhancing Accessibility for Visually Impaired

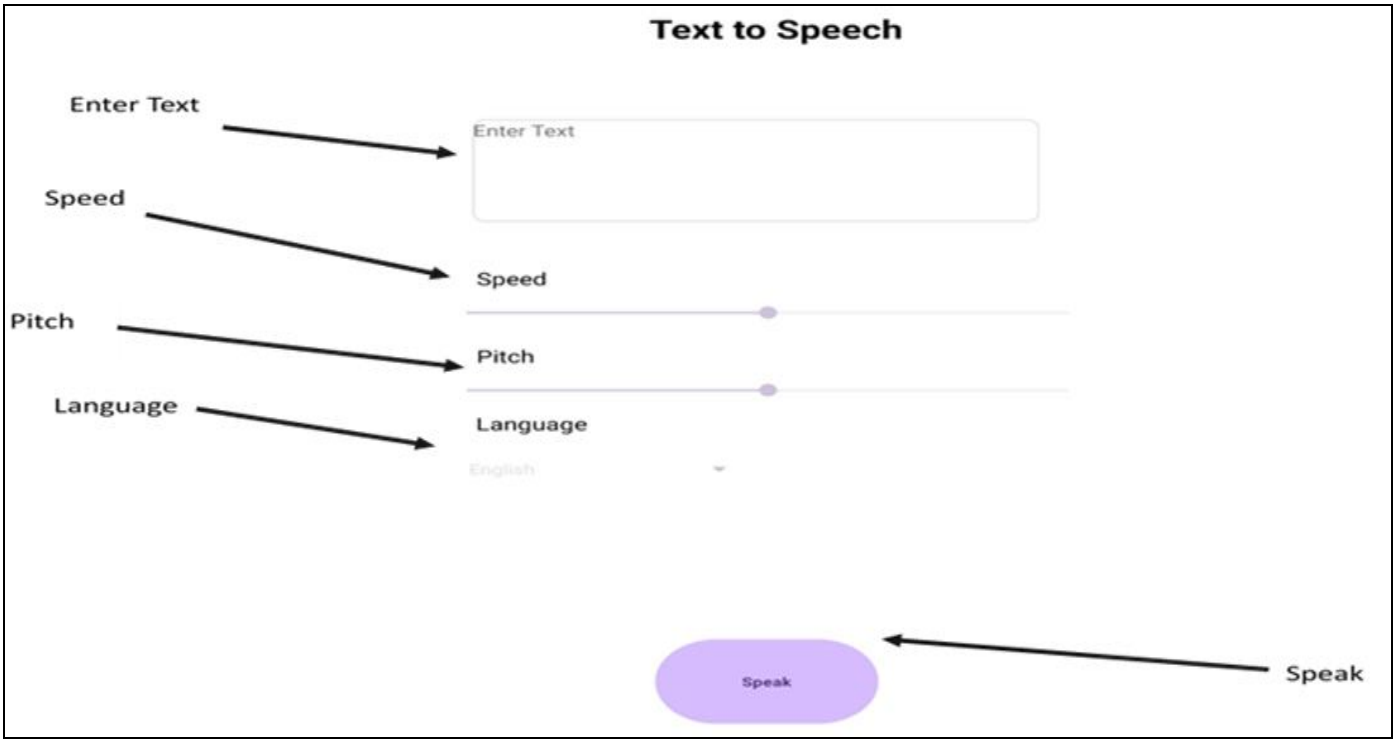

Fig 3 Text-to-Speech of Vision Assistant: A Mobile App for Enhancing Accessibility for Visually Impaired

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun260

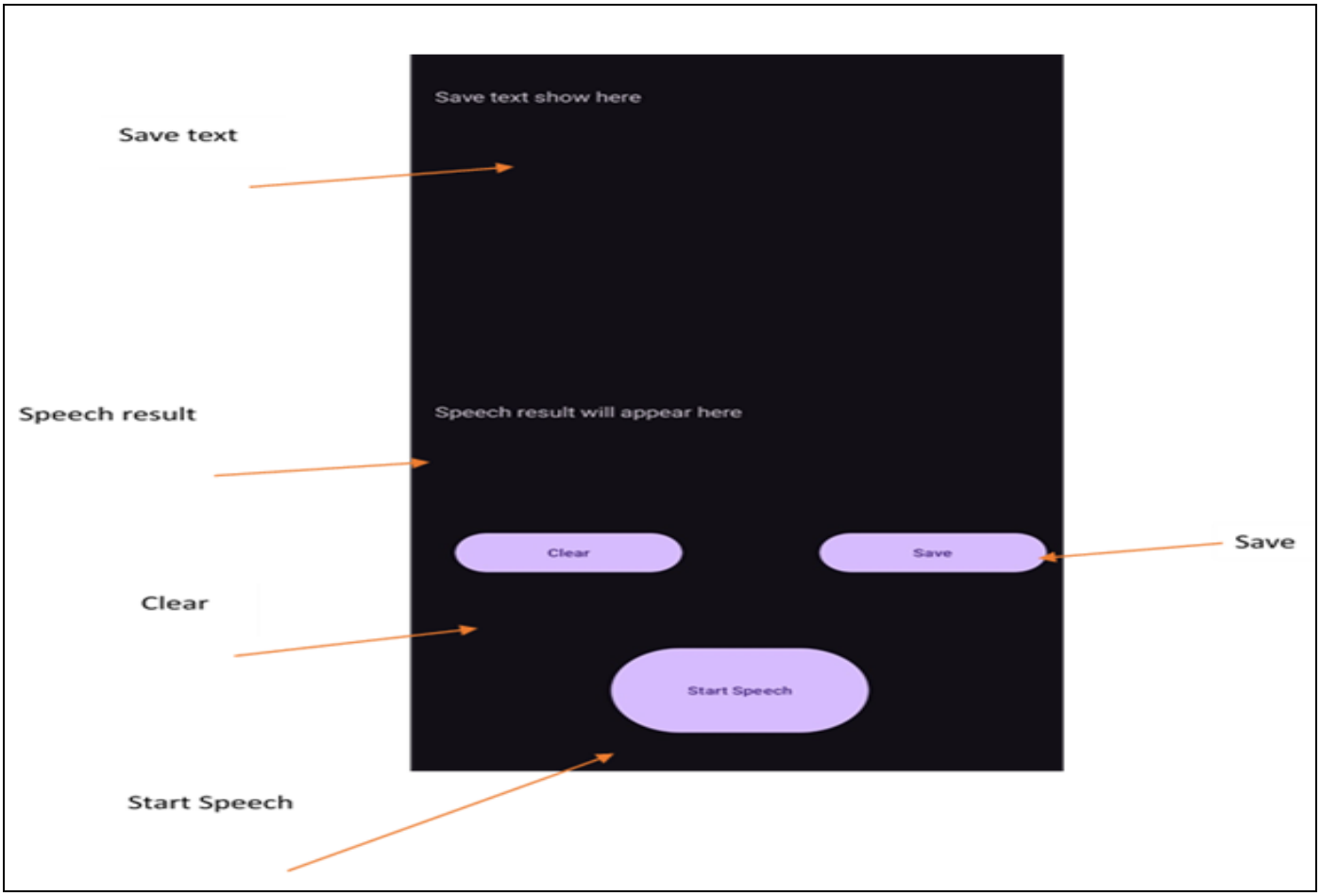

Fig 4 Speech to Text of Vision Assistant: A Mobile App for Enhancing Accessibility for Visually Impaired.

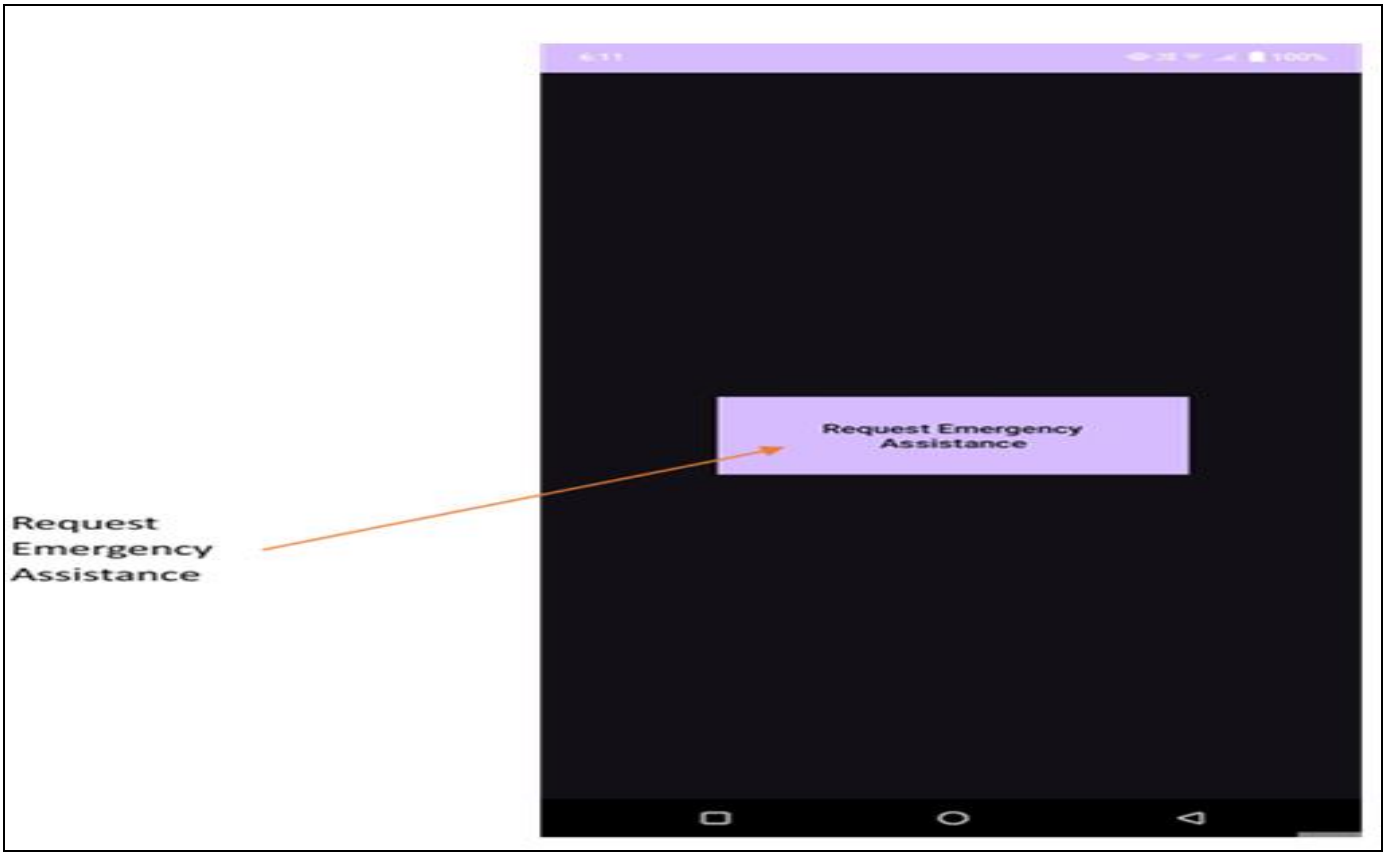

Fig 5 Emergency Message of Vision Assistant: A Mobile App for Enhancing Accessibility for Visually Impaired.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun260

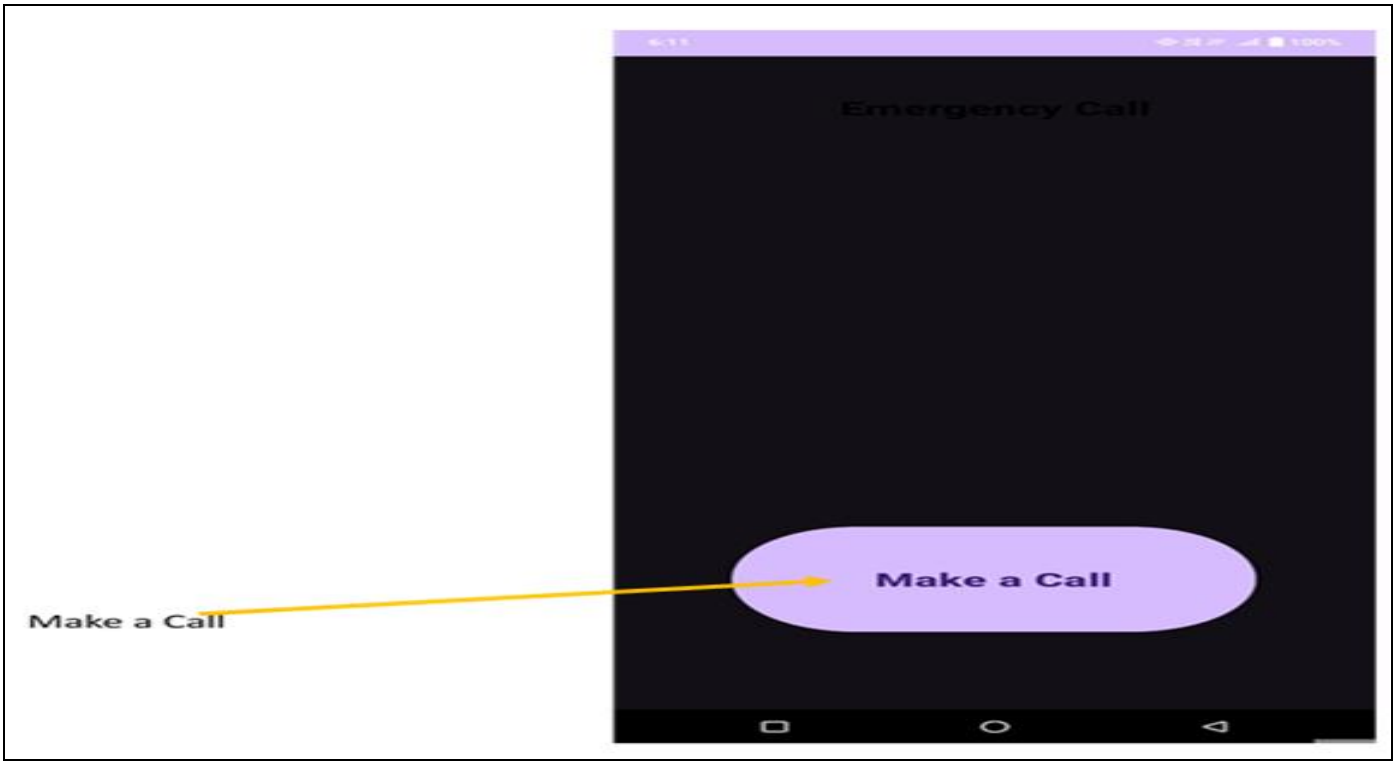

Fig 6 Emergency Call of Vision Assistant: A Mobile App for Enhancing Accessibility for Visually Impaired.

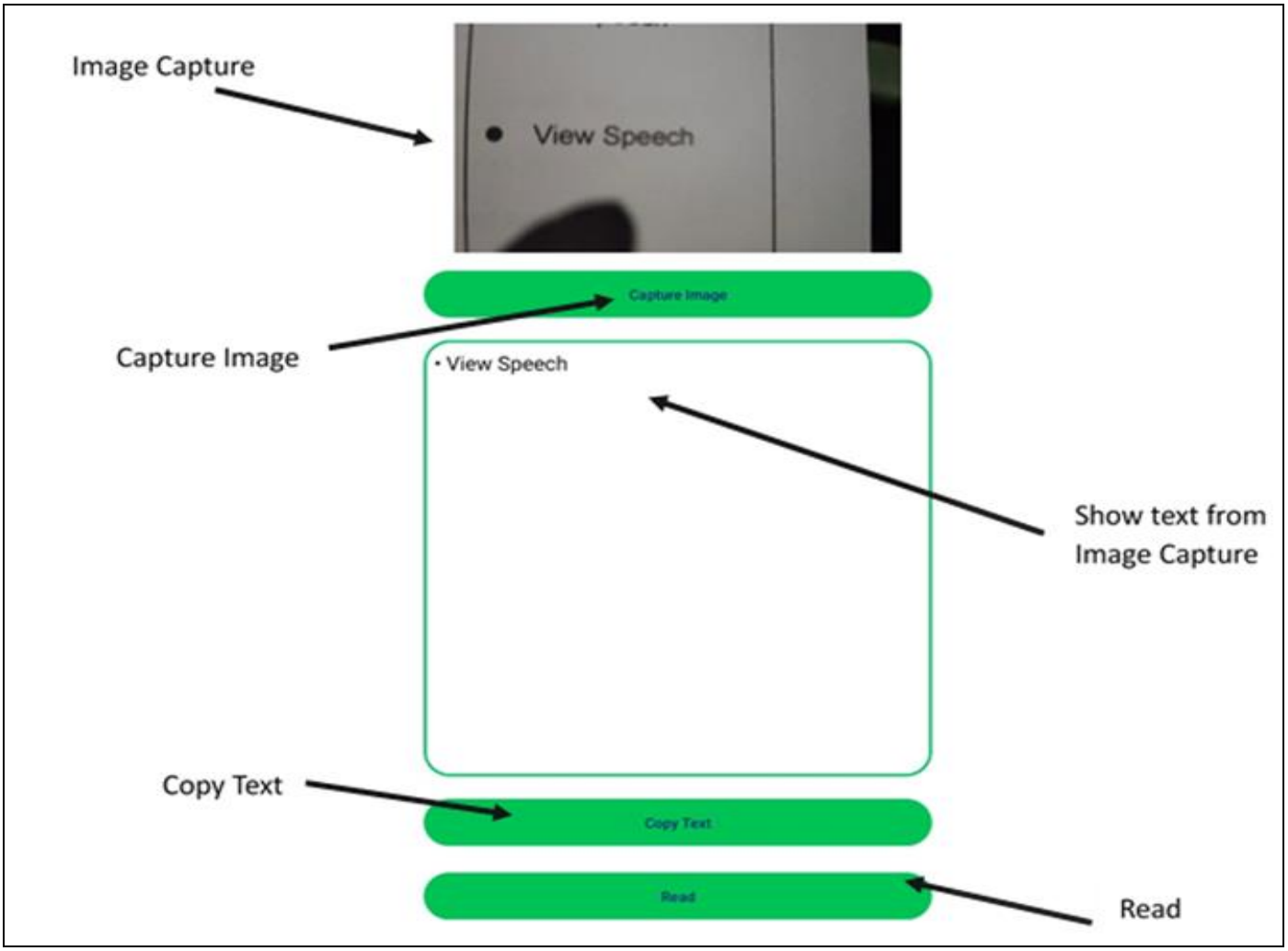

Fig 7 Image to Text of Vision Assistant: A Mobile App for Enhancing Accessibility for Visually Impaired.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun260

V. EVALUATION AND RESULTS

➢ *Usability Testing*

The vision assistant's usability testing process indicated that the speech-to-text and text-to-speech capabilities were easy and user friendly to control by participants. The majority of participants rated the interface as intuitive, particularly during the execution of real-time tasks when rapid conversion from speech to text was required. There were a few complaints about background noise and accents, but the overwhelming majority were happy with the responsiveness and clarity of their systems. Benefits of text-to-speech Listening to content read can support understanding and help you multitask, especially as playback of content is clear. These findings validate the suitability of the assistant's design to the usability requirements of the visually impaired user.

➢ *Performance Metrics*

The emergency calling(alarm) is very dependable and fast on the performance side. The survey respondents observed that test calls were made almost immediately, with only occasional delays for external reasons (i.e. weak signals). The assistant contacted the correct guardian every time and gave a response within seconds, most of the users verified. During simulated emergencies, alert notifications were effectively delivered and feedback revealed overall high satisfaction with the system's effectiveness. These measurements demonstrate the capabilities of the system to execute essential tasks under pressure, an indispensable feature for practical field applications.

➢ *Comparative Analysis*

Comparison with same kind of assistive tools. The mobile phone base vision assistant performed competitively in terms of functionality and accessibility. Users noted that although other tools may have basic speech or text features, this assistant's ability to connect to emergency response and multimodal communication was distinguishing. The combination of assistive conversion tools with emergency processing is a value proposition for users in need of a product that provides both accessibility and safety features. While there may be other tools that deliver more voice customization, this one's simplicity and robustness put it ahead along dimensions like ease of use and overall user trust.

➢ *Results and Finding*

Many of the users found the speech-to-text feature simple and helpful, some even making a note that it can help cut time and is a great feature for repetitive tasks or for some hands-free typing. Most people liked its overall accuracy which was around 80% but did find a few limitations - missed words from background noise, difficulty of mixed Filipino and English speech and problems with accents. Performance was optimal for all but a small number of users, who had to consciously speak differently all slower or more clearly than the reason of the time. In general, it is considered a viable substitute to manual typing.

The "text-to-speech" feature is highly praised when it comes to multitasking and accessibility. Users said they found that it was useful to come and listen to content while doing other things and to follow along to long strings of text messages or instructions without having to keep looking at the screen. While a few commentators called the voice robotic and complained that it was too fast, users liked being able to control the speed. It also promoted learning to operate independently and focus better for others, so it was a reliable daily variable for them.

The emergency call function worked very well for us according to the feedback we received from most users. Some experienced slight delays or other glitches, such as two presses required to activate or complaints of weak signals. Tricky moments aside, most commenters agreed the feature works well and is reliable, with one user saying if interlining added voice confirmation to the mix they feel even more confident in using a phone in an emergency.

Strong trust that the vision assistant can make its message get to the right person in case of emergency was reported by the majority of the participants. Their fears were allayed after the system always called the right contact, typically a close relative such as a mother. But some users noted concerns with reaching out in a situation in which the contact number might not be the same, or they wished for extra steps of "Are you sure?" or the choice to contact multiple people. Yet there was an air of confidence and security overall.

Participants were pleased with the speed and accuracy of the emergency alerts sent to the guardians during the simulated emergencies. Many mentions the alert could received in less than 10 seconds, and it worked even when internet conditions are bad. Most said the system was fast and reliable, but some wanted to see some minor improvements, like a sound to alert a guardian. Other than these minor recommendations, the firefighter emergency alert function was perceived as trustworthy and comforting.

VI. DISCUSSION

➢ *Interpretation of Findings*

- **RQ1:** *How effective do speech-to-text and text-to-speech assist a mobile-based vision assistance system to enhance usability for the visually impaired in live interaction?*

✓ *Interpretation:*

Most of them were able to find the speech-to-text feature somewhat easy to use and useful, notably for its time-saving and less manual input. Yet effectiveness depended on the external factors of background noise, mixed language use (Filipino-English), and the user's accent. Despite its overall efficiency and convenience, users were required to modify their speaking clearly or slowly for higher recognition rate. This may indicate that although the system is highly accessible there is still opportunity to

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun260

improve its language and accent flexibility to be even more inclusive.

The text-to-speech functionality on this, which is ideal for accessing new types of content in a digital format and you don't want to read it on the screen. It improved multitasking and focus, and provided a greater sense of independence for some users. The TTS speed could be adjusted, so although some may find the voice a bit robotic or slow, since it was adjustable, it was not a major problem. All in all, the feature is a great accessibility function serving different user groups well particularly in the case of aural learning/ convenience.

- **RQ2:** *What is the performance of the AI assistant's emergency-calling feature in terms of the automatic contacting of emergency contacts in simulated emergency situations?*

✓ *Interpretation:*

The emergency call feature was found responsive and problem-free by most participants; this further validated that the application performs to expectations during simulated real emergencies. The relatively few hiccups some of them experienced, or the occasional repeated action, were blamed on signal degradation or the fact that the interface is very sensitive. In spite of these limitations, there is the general agreement that the system does perform its purpose effectively. To even more reassure users, some tweaks like haptic or voice feedback could be the solution for the small complaints.

The assistant is generally trusted to contact the specified contact in emergencies, with consistent and correct task completion. Confidence is anchored in the assistant's hardwired contact with only one, specific person. But then the downsides revealed themselves in the event of contact info change, or the need for a second contact. Despite consumers' trust in the system, gaining more flexible contact ways and real-time confirmation messages could make it more reliable in different situations.

- **RQ3:** *What is the performance in terms of response time and success rate of the emergency system for the alert notification to designated guardians?*

✓ *Interpretation:*

Participants were found to be highly satisfied with the timeliness and accuracy of the emergency alerts and reported that alerts were successfully delivered even in poor coverage areas. The response time was typically in the range of seconds, conveying a feeling of security and efficiency. It seems that for the most part, the system is quick and reliable for emergency simulations: While some users wish for a sound alert and better consistency, everyone is in general agreement that the assistant does its job. These results imply that the safety alert functionality fulfills the expectation of the users and offers a sense of security to them.

➢ *Contributions and Innovation*

The newly introduced idea of combinational use between assistive technologies and emergency alert systems in one portable device, dedicated for the benefit of blind people, is innovatively implemented in this work. While other traditional apps may be single purposed, this system incorporates speech interaction, image reading and safety messaging into one user interface. The transformation is the inobtrusive integration, which leads to more independence and more safety, without the user having to run several apps concurrently. The assistant provides an exciting route to developing inclusive tech solutions that really serve and address life needs of vulnerable users, particularly within academic and home environments.

➢ *Limitations and Future Work*

Although outcomes proved to be positive, the research was restricted in the number of subjects tested and the controlled settings. Some small technical issues (voice recognition in mixed language, some delay because of bad network) were mentioned. Next: Wider field testing, the inclusion of varied language input and more in-depth emergency response features such as GPS location tracking or dual contact alerts. Additional Benefits Improvements in voice personalization and feedback affirmation will add to user confidence and accessibility. Such enhancements may take the assistant above the level of a leading assistive technology.

VII. CONCLUSION

➢ *Summary of Key Findings*

The speech-to-text and text-to-speech functions of the vision assistant are highly usable and have positive effects on daily communication of visually impaired users. The emergency functions were also very reliable, with rapid and accurate calls and alerts being sent out to nominated guardians. All in all, participants were generally pleased with the system's user-friendliness, response time and the reliable handling of emergencies. Minor usability issues were identified, but did not substantially impact overall usability.

➢ *Final Remarks*

A mobile vision assistant seem to be a promising practical and motivational tool for the blind and visually impaired, providing a mixture of assistance for communication and personal safety. It not only offers better usability, but also emergency preparation, and is an all-in-one solution for real user needs. By refining such a successful invention with more rigorous testing, this could be a great asset to the inclusive technology world and quality of life for those who suffer with visual-impairments.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/25jun260

REFERENCES

[1]. Alfayez, Z., et al. (2023). Read for me: Developing a mobile-based application for both visually impaired and illiterate users to tackle reading challenge. [Details about the journal or conference, volume, pages if available].
[2]. Card, S. K., Moran, T. P., & Newell, A. (Year). The Model Human Processor. [Original publication details if available].
[3]. Meenakshi, R., et al. (2022). Development of mobile app to support the mobility of visually impaired people. [Journal/Conference Name], Volume(Issue), pages. https://doi.org/xxxx
[4]. Naotunna, S., & Hettige, B. (2024). Mobile applications for visually impaired: A review. [Journal/Conference Name], Volume (Issue), pages. https://doi.org/xxxx
[5]. Pushpakumar, R., et al. (2023). Overview of HCI theories and models. [Journal/Conference Name], Volume(Issue), pages. https://doi.org/xxxx
[6]. Sayal, R., et al. (2020). Mobile app accessibility for visually impaired. [Journal/Conference Name], Volume(Issue), pages. https://doi.org/xxxx