

## Research Article

# Development of Assistant Quran Application With Real-time Voice Commands

Suhendra\*, Siti Aisyah, and Dewantoro Lase

Politeknik Negeri Media Kreatif, Medan, Indonesia

**ORCID**Suhendra: <http://orcid.org/0000-0003-1384-2066>**Abstract.**

This application is designed to assist *Quran* memorizers or prayer leaders (*Imams*) in recalling their memorization. The aim of this research is to develop an Android-based AI-Qur'an assistant application with real-time voice command features. The waterfall method is used as a reference during the application development stages, including system analysis, system design using UML, implementation, and testing with blackbox testing technique. This AI-Qur'an assistant application utilizes Google Speech API to recognize user's voice and match it with the requested surahs and verses. The result of this research is an AI-Qur'an assistant application that helps users easily search for Quranic verses through real-time voice commands. The benefits of this application include saving time and facilitating users in interacting with the AI-Qur'an.

**Keywords:** voice command, Google speech API, realtime, waterfall, AI Qur'an

Corresponding Author:

Suhendra; email:

suhendra\_85@polimedia.ac.id

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## 1. INTRODUCTION

The Quran is considered the holy book for Muslims and serves as the primary reference for worship and the study of Islamic teachings. In the current digital era, many smartphone users seek an easy and fast way to access the Quran. One of the most practical ways is by using Quranic applications on smartphones [1, 2].

In the development of Quranic applications, the use of voice recognition technology has attracted the attention of application developers [3, 4]. With this technology, users can control Quranic applications using their voice, making it more convenient and effective to access Quranic verses.

However, currently, Quranic applications with voice command features are still very limited. Therefore, further research and development are needed to enhance the quality of these applications. Hence, this research aims to develop a Quran Assistant application with real-time voice commands. This application will enable users to access Quranic verses more easily and quickly by simply using their voice [5, 6].

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With the Quran Assistant application featuring real-time voice commands, it is hoped to provide benefits to Muslims in studying and accessing Quranic verses more easily and effectively. Additionally, the development of this application can also contribute positively to the advancement of voice recognition technology in Indonesia [7, 8].

In the context of the Quranic application, voice recognition technology can help users access Quranic verses more conveniently without having to use a keyboard or touch the screen [9, 10]. Users can access Quranic verses more quickly by giving voice commands. In the Quran Assistant application with real-time voice commands, users can request the application to read specific verses or search for Quranic verses based on specific keywords [11].

It is expected that the results of this research will provide a positive contribution to the development of Quranic applications with voice recognition technology in Indonesia and offer benefits to users in studying and accessing Quranic verses more easily and effectively.

## 2. METHODOLOGY/ MATERIALS

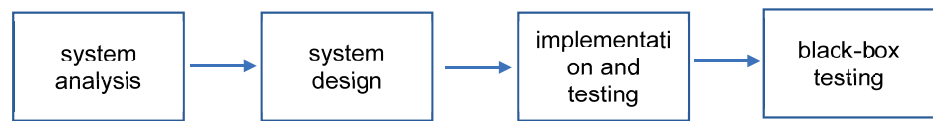
This research employs the Text-to-Speech (TTS) method as a guideline in its process. Starting from a previously outlined problem, the first step is system analysis. This stage is crucial because it outlines the requirements necessary for the success of the system. It covers both functional requirements related to features and non-functional requirements as tools to realize them.

The next step is system design. The design includes User Flow Diagrams such as flowcharts, use case diagrams, database design, and interface design to facilitate the implementation phase.

Finally, the implementation and testing phase is carried out. This stage represents the implementation of the previous steps. Subsequently, testing is conducted using black-box testing techniques, where the testing focuses on the system's functionality related to the voice command aspect to ensure its proper operation, such as invoking commands to open or play specific Surahs and verses. The design of this experimental study is displayed in Figure 1.

## 3. RESULTS AND DISCUSSIONS

The results of this research encompass a deeper understanding of the implementation of voice recognition technology in the Quran Assistant application, as well as concrete



**Figure 1:** Research Design.

steps to achieve the formulated goals. Some of the outcomes identified from this research include:

### 3.1. Effectiveness of Voice Recognition Technology

This research confirms that voice recognition technology can be effectively implemented in the Quran Assistant application. Through the use of this technology, users can interact with the Quran through voice commands more easily and intuitively.

### 3.2. Integration of Key Features

This research successfully integrated key features such as searching Quranic verses by keywords and the ability to read specific verses through voice recognition. This provides users with a more comprehensive and beneficial experience, enhancing the value of the Quran Assistant application.

### 3.3. Accuracy of Voice Recognition

Performance evaluation of the application indicates that the accuracy of voice recognition has been achieved within acceptable limits. Textual results of voice recognition have been aimed at aligning with the original Quranic text, though further improvements may be necessary.

**Application Responsiveness:** This research successfully maintains the responsiveness of the application, ensuring that user interactions with the Quran Assistant feel fast and responsive.

### 3.4. Guidance for Further Development

The results of this research can provide valuable guidance for the further development of the Quran Assistant application, both in terms of improving voice recognition accuracy and optimizing overall application performance.

Overall, the findings of this research have significant implications for enhancing user access and interaction with the Quran through the voice recognition-based Quran Assistant application. With the identified steps and achievements, this application can offer significant benefits to users in efficiently and effectively engaging in Quran-related activities.

## 4. CONCLUSION AND RECOMMENDATION

This study identifies and analyzes three crucial aspects related to the implementation of voice recognition technology in the Quran Assistant application. Firstly, the effectiveness of implementing voice recognition technology in the Quran Assistant application is the primary focus in efforts to simplify user access and interaction with the Quran through voice. By harnessing advanced voice recognition technology, users can experience a more intuitive and comfortable interaction with this application.

The integration of key features such as searching Quranic verses by keywords and the ability to read specific verses through voice recognition enriches the functionality of the Quran Assistant application. Creative steps and good interface design are implemented to ensure that this integration provides users with a smooth and efficient experience.

The assessment of application performance is critical in measuring the quality of voice recognition technology implementation in the Quran Assistant. Voice recognition accuracy is an important parameter to ensure the alignment of recognized text with the original Quranic text. Additionally, application responsiveness needs to be maintained to ensure that users perceive fast and responsive interactions.

Overall, this research underscores the importance of the effective implementation of voice recognition technology in the Quran Assistant application, highlights the integration of key features for user convenience, and emphasizes the need for ongoing evaluation of application performance in terms of accuracy and responsiveness. Thus, the findings of this research provide valuable guidance for the development and optimization of the Quran Assistant application supported by voice recognition technology.

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