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PST023 - AI-POWERED MOBILE APPLICATION PROTOTYPE FOR SURAH AL-MULK MEMORISATION

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ABSTRACT

This study presents an AI-powered mobile application prototype for *Surah Al-Mulk* memorisation. The application applies a *one day, one verse* approach for beginners, which integrates the memorisation technique such as chunking, *Tasalsuli* and *Tasmi'* with Automatic Speech Recognition (ASR). The VARK model is embedded to create a multi-sensory and step-by-step learning experience that is suitable for beginners. Expert evaluation using the Fuzzy Delphi Method showed strong consensus confirming that the prototype is relevant for Quran memorisation education. Performance testing of the ASR module produced an average Character Error Rate (CER) of 13.69% and Word Error Rate (WER) of 13.13%, indicating moderate recognition accuracy. The novelty of this product lies in its integration of Qur'an memorisation techniques with AI-driven speech recognition and multi-sensory engagement strategies. The prototype provides an accessible and interactive platform that is suitable for beginners. It is also able to bridge the traditional pedagogy with modern technological innovation in Quran education.

Keywords – AI-Powered Mobile Application, Speech Recognition, Quran Memorisation

INTRODUCTION

Nowadays, many people are motivated to learn and memorize the Quran due to its benefits in spiritual and Islamic education. Thus, the tremendous growth of Quran memorisation classes, either physical or online, has made it accessible to learners of all ages. Among all the surahs in the Quran, Surah Al-Mulk is commonly chosen for memorisation due to its virtues. According to Hadith, Prophet Muhammad (ﷺ) has encouraged reciting it every night, and it is believed to protect from the punishment of the grave. Besides, this surah contains 30 verses, and it is an ideal choice for beginners. Traditional memorisation approaches, which rely on face-to-face learning called *tasmi'*, are challenging due to time consuming and requiring full engagement with the teacher. Therefore, emerging technologies such as mobile applications and artificial intelligence (AI), particularly speech recognition, provide new opportunities to make memorisation more accessible, interactive, and effective. However, the existing mobile applications often do not provide the specific steps and guidance involved in memorising the Quran (Afzal et

al., 2023). This limitation hinders learners, especially beginners, who lack a clear understanding of how to initiate an effective memorisation of the Quran. This study, therefore, proposes a prototype of a mobile application specifically designed to support the memorisation of *Surah Al-Mulk*.

OBJECTIVE

The objective is to develop a mobile application prototype for surah Al-Mulk memorisation based on speech recognition. This application aims to enhance learner engagement and provide step by steps guided for beginners with one day one verse in memorising surah Al-Mulk.

DESCRIPTION OF THE PROJECT

The need analysis of this prototype was conducted based on the interview session with four experts from the Faculty of Quran and Sunnah Studies, USIM. Next, the prototype was developed as a proof of concept using FlutterFlow and Google Cloud AI-Speech-To-Text API for the Arabic language, which was integrated in the prototype as its Automatic Speech Recognition (ASR) Module. The mobile application can be executed using the Android OS. Figure 1 shows the conceptual framework of the integration of Quran memorisation with AI mobile application to develop a prototype. Figure 2 shows an example of a mobile application prototype.

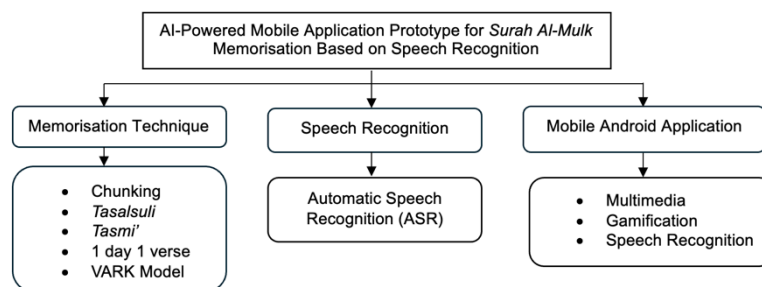
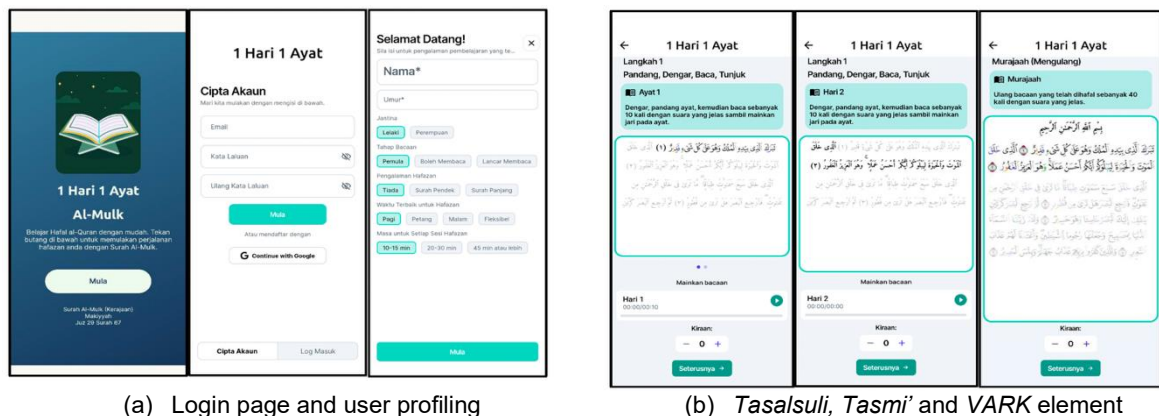


Figure 1: Conceptual framework



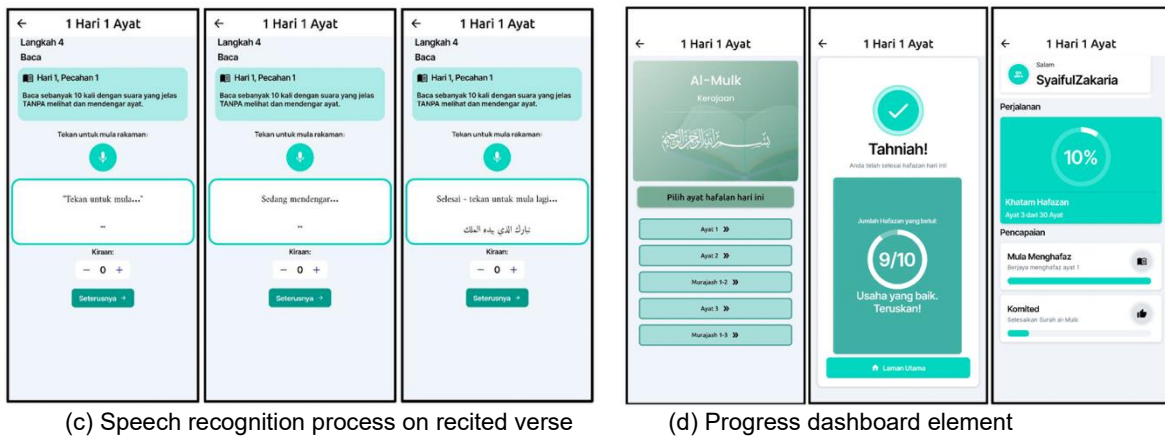


Figure 2: Mobile Application Prototype (a) Login page and user profiling, (b) *Tasalsuli*, *Tasmi'* and VARK element, (c) Speech recognition process on recited verse and (d) Progress dashboard element

The prototype was then evaluated using the Fuzzy Delphi Method with four experts. They completed a structured questionnaire with fourteen items rated on a five-point Likert scale. The analysis showed strong consensus on 13 out of 14 items in the framework components, indicating unified expert approval. However, the speech recognition component received significantly lower consensus, with only 50% expert agreement and concerns about recognition accuracy. In assessing the speech recognition performance, testing was conducted with four participants of varying demographics. Each participant performs 10 test runs, reciting a Quranic verse. The overall average CER and WER across all 40 test runs were 13.69% and 13.13% respectively, indicating a moderate level of recognition accuracy.

NOVELTY

The product prototype is novel as it integrates the memorisation technique and an AI mobile application using the approach of one day one verse in *Surah Al-Mulk*, which is suitable for beginners. The step-by-step guidance in the Quran memorisation technique, such as chunking, *Tasalsuli* and *Tasmi'* was embedded in the mobile application. The prototype also incorporates VARK (Visual, Aural, Read/Write & Kinesthetic) and speech recognition model to deliver multi-sensory engagement, helping learners see, hear, recite and interact with the Quranic verse.

CONCLUSION

This study developed an AI-powered mobile application prototype to support the memorisation of Surah Al-Mulk, integrating traditional Qur'an memorisation techniques with modern speech recognition technology. The prototype applied a structured one day, one verse approach and incorporated Quran memorisation methods such as chunking, *Tasalsuli*, and *Tasmi'*, and VARK-based multi-sensory engagement. It also provides step-by-step guidance for beginners. Fuzzy Delphi Method expert validation supported the framework's educational value and importance, with high consensus on most of the prototype components. The speech recognition module was found to have moderate accuracy but was recognized as an emergent property that can foster learner feedback

and autonomy. The novelty of this study is integrating traditional Quran memorisation practices with an AI Mobile application as interactive learning for beginners to memorise *Surah Al-Mulk*. The prototype highlights the potential of technology to complement, rather than replace, teacher-guided memorisation, making Quran memorisation more accessible for learners of all ages. Future work should focus on refining the speech recognition accuracy, expanding testing with larger groups of learners, and developing the prototype into a high-fidelity application for wider use.

REFERENCES

- Afzal, M. R., Ali, A., Mashwani, W. K., Anam, S., Zubair, M., & Qammar, L. (2023). Recitation of The Holy Quran Verses Recognition System Based on Speech Recognition Techniques. *UMT Artificial Intelligence Review*, 3(2), 1–20. <https://doi.org/10.32350/umt-air.32.01>
- Ahmad, A. M., Musa, M. A., Saleh, M. H., Alias, N., & Muhammad, K. A. (2022). Tahfiz Education in Malaysia: Issues and Problems in Memorising Quranic Mutashabihat Verses and its Solution. International. *Journal of Academic Research in Business and Social Sciences*, 12(1), 76–84. <https://doi.org/10.6007/IJARBSS/v12-i1/10821>
- Hassan, S. H. C., Shamsuddin, S. N. W., & Yusof, N. H. (2022). Towards Designing a Framework for Adaptive Gamification Learning Analytics in Quranic Memorisation. *Pertanika Journal of Science and Technology*, 31(1), 257–278. <https://doi.org/10.47836/pjst.31.1.16>