DEVELOPMENT OF SMART LIVE EDU-MULTIMEDIA MULTILINGUAL ADAPTIVE FOR DIGITAL QURAN TO CHILDREN AND PARENTS UTILIZE META-DEEP LIGHTWEIGHT SORA ALGORITHM

Imam Cholissodin, Achmad Shampton, Arief Andy Soebroto
Correspondence email : imamcs@ub.ac.id

INTRODUCTION

- Collaboration Islamic religious **education methods in the family home** is urgent and important, particularly for children and parents.
- Especially regarding the **introduction of the Quran** as the word of Allah SWT delivered by the Prophet Muhammad SAW through the angel Gabriel.
- To **improve education ways**, such as only monotonous with static books, static video, **is not enough** to attract interest in reading to memorization **in the family home**.
- This study carried out an adaptive approach by utilizing technology from the **meta-Deep lightweight SORA algorithm** as a tool to **create a smart digital Quran** that is able to display **live adaptive multilingual** multimedia, including **textual**, **audio**, and **video** content.
- So, it's **supporting for early childhood education and parents**. The results of this study are expected to be able to provide a enjoy and fun treasure of Islamic education with a blended method while maintaining methods such as in Islamic boarding schools with AI technology.

LITERATURE REVIEW

- **The advancement of digital technology** has dramatically reshaped the educational landscape, **including religious education**. The Digital Quran is an essential tool for children and parents, offering a more interactive approach to learning [1-3].
- Given the global distribution of the Muslim population, **the importance of multilingual support in digital Quran platforms** cannot be overstated. Existing systems often cater to a limited range of languages, making it difficult for non-native speakers to engage meaningfully with the content [4,5].
- **The main one of challenge** is how the platform is designed to accommodate both children and parents, offering age-appropriate, culturally relevant content to better understanding [6-8].
- The **meta-Deep Learning** and **SORA algorithm** offers several key advantages. It is making ideal for mobile and remote learning applications based on create video from adaptive text input. The algorithm's **meta-learning framework** allows the platform to rapidly adapt to new users and learning environments with minimal data input [11,12]

ICGT 2024

Development of Smart Live Edu-Multimedia Multilingual Adaptive for Digital Quran to Children and Parents Utilize meta-Deep Lightweight SORA Algorithm

METHODS

- The SORA algorithm employs a basic approach for processing text materials, achieving the video generation process can be high resource, and the user experience is fairly standard.

- This study proposed of meta-Deep Lightweight SORA Algorithm:

  - Input:
    1. Quran text, for example from one of the translations in Indonesian
    2. Multilingual *.srt file (Arabic, Indonesian, Java, and English, etc), audio and metadata

  - Output:
    1. Video Smart Live Edu-Multimedia of Quran
    2. File *.srt with combine all language

  ✅ The main poin proposed is the **Cooperative-Agents Meta-Learning (CAML) algorithm** 🐫 / 🐫 as "meta-Deep Lightweight" mechanism for SORA [29] that enables few-shot meta-learning [31], enhanced by mixed [29] & [31] based on pairs few "task" sets for Train and Test e.g. ([support_set_1, query_set_1],.., [support_set_n, query_set_n]) with "and/or" flexible combination of each task.

ICGT 2024

Development of Smart Live Edu-Multimedia Multilingual Adaptive for Digital Quran to Children and Parents Utilize meta-Deep Lightweight SORA Algorithm

RESULT AND DISCUSSION (<mark>on going</mark>)

- **Phase 1: Performance in the Multilingual Tests**
  the meta-Deep Lightweight SORA algorithm exhibited superior performance in the multilingual scenario. This highlights the algorithm's adaptability to various languages, improving the accessibility of Quranic content for diverse users.

- **Phase 2: Evaluation of Performance of Video Generative Across Different Surah Tests**
  For very short surahs such as Al-Kautsar (3 ayahs), the average time per ayah is around 1.3 seconds, resulting in a total video generation time of 10.2 seconds. Similar surahs like Al-Ikhlas, Al-Falaq, and An-Nas have slightly longer times, between 11.7 and 13.0 seconds. The algorithm efficiently processes shorter surahs, allowing for rapid video generation while maintaining quality.

ICGT 2024

Development of Smart Live Edu-Multimedia Multilingual Adaptive for Digital Quran to Children and Parents Utilize meta-Deep Lightweight SORA Algorithm

RESULT AND DISCUSSION (==on going==)

Scenario	Average Computation Time (s)
Monolingual (Arabic)	18.07
Bilingual (Arabic-Indonesia)	19.02
Multilingual (Arabic, English, Indonesia, Java)	19.07

(a)

Scenario	Number of Ayahs	Avg. Time (s)	Video Gen. Time (s)
Long Surah (Al-Baqarah)	286	153.07	340.06
Very Short Surah (Al-Kautsar)	3	01.03	10.02
Very Short Surah (Al-Ikhlas)	4	01.05	11.07
Very Short Surah (Al-Falaq)	5	01.06	12.03
Very Short Surah (An-Nas)	6	01.08	13.00

(b)

- Phase 1: (a) Regarding computation of Performance in the Multilingual Tests, the average processing time per verse slightly and fast.
- Phase 2: (b) Regarding computation of Evaluation of Performance of Video Generative Across Different Surah Tests, the average processing time per Surah is also fast.

Development of Smart Live Edu-Multimedia Multilingual Adaptive for Digital Quran to Children and Parents Utilize meta-Deep Lightweight SORA Algorithm

CONCLUSION

- The development of the Smart Live Edu-Multimedia platform, utilizing the meta-Deep Lightweight SORA algorithm for multilingual adaptive Quran learning, has yielded encouraging outcomes. **The system achieved an average performance time of approximately very efficient** in generating multilingual and video content.
- **This technology acts only as a supplementary tool for children's Quran learning at home with parents**. However, it remains essential for children to continue their **Quranic studies with teachers** who have an authenticated chain of transmission (**sanad**) that traces back to the Prophet Muhammad (PBUH).
- To further enhance performance, optimizing the SORA algorithm to reduce adaptation delays for different languages is recommended. **Continuous to improve again of CAMML algorithm to the AI model** will help improve content accuracy and **relevance**, ensuring that the educational experience remains engaging and effective for users across various learning environments.

ICGT 2024

Development of Smart Live Edu-Multimedia Multilingual Adaptive for Digital Quran to Children and Parents Utilize meta-Deep Lightweight SORA Algorithm

REFERENCES

1) Ali A 2021 Interactive Quranic education systems Int. J. Islam. Stud. 15 150–60
2) Rahman B 2020 AI in Quranic education: A review J. AI Innov. Educ. 10 78–85
3) Al-Ghamdi A and Al-Zahrani S 2018 A new approach to Quranic learning using mobile apps Procedia Computer Science vol 134 (ScienceDirect) pp 224–31
4) Ahmed C 2022 Multilingual Quranic learning platforms IEEE Trans. Educ. Technol. 49 120–9
5) Malik D and Hasan E 2021 Challenges in digital Quranic education J. Islam. Educ. Res. 21 45–58
6) Khan E 2020 AI-enhanced educational tools for religious studies IEEE Access 7 114–20
7) Yusuf F 2020 Personalized Quranic learning for children Educ. Multimed. Int. 8 23–30
8) Ibrahim G 2021 Deep learning in Islamic education systems IEEE Comput. Intell. Mag. 17 102–10
9) Ali H 2021 Lightweight AI algorithms for mobile applications IEEE Trans. Mob. Comput. 18 92–9
10) Mansour I and Karim J 2022 Meta-learning frameworks in educational AI J. Educ. Res. AI 15 130–42
11) Saleh J 2023 Adaptive learning models for Quranic education IEEE Trans. Knowl. Data Eng. 35 1230–5
12) Hassan K 2018 Real-time adaptation in digital learning platforms Procedia Computer Science vol 141 (ScienceDirect) pp 97–104
13) Rashid L 2022 Meta-learning in low-resource environments J. Comput. Sci. Educ. 23 110–7
14) Ahmad M 2021 Multimedia approaches to Quranic education J. Multimed. Technol. Educ. 20 84–93
15) Zain N 2020 Interactive Quranic learning for children IEEE Access 8 1120–8
16) Latif O 2020 The role of multimedia in religious education Educ. Innov. Rev. 16 43–50
17) Malik P and Abdullah Q 2021 AI-based real-time learning models IEEE Trans. Comput. Educ. 27 212–21

ICGT 2024

Development of Smart Live Edu-Multimedia Multilingual Adaptive for Digital Quran to Children and Parents Utilize meta-Deep Lightweight SORA Algorithm

The 14th International Conference
on Green Technology – ICGT 2024

THANK YOU!