Issues in Evaluating the Retrieval Performance of Multiscript Translation of Al-Quran

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Abstract: The main aim of this paper is to present on the issues of evaluating the retrieval performance of the multi-script indexing of translated texts of al-Quran. Translations of al-Quran has played a major role in the recitation of al-Quran in its original texts and understanding through the translated words, among the public. Even in querying, non-Arabic speakers will find the texts through the translated words in addition to topical search. Transliteration is a need in the absence of terminology in the normal conduct of Cross-Language Information Retrieval research area, while in the case of this research, the transliterated version was meant for those with the ability to read the older script in its own original translation. The Malay Roman script has its own version of the translation. Objectives include to examine the reported retrieval performance of these texts and to evaluate the retrieval performance of the translations available in two different scripts of a language: Malay *Rumi* and Malay *Jawi*, built upon *Pimpinan ar-Rahman* version, Indri and *Jawi* software. Measures include recall, precision and overlap. Recall explains the performance in retrieving all relevant items, while precision describes the performance in rejecting non-relevant items. Overlap exhibits the retrieval of items common in both sub-collections. Queries are constructed from questions posed by newspaper readers in both scripts resulted as keywords with semantic, while relevance judgment is made by a panel of expert based on answers to the questions. Findings based on recall, precision and overlaps revealed the major issues of standardized texts, translation and transliteration, text alignments, queries construction, question-answering relevance vs. topical relevance. Indri's performance is not a major issue, while the *Jawi* software requires improvement to a minor extent. This paper contributes to the issues of handling test collections involving parallel corpus in the area of Cross Language IR facing the Muslim World.

Keywords: Retrieval performance, Al-Quran, Malay *Rumi*, Malay *Jawi*.

1.0 Introduction

Al-Quran is fundamental for all Muslims as it is a comprehensive guide to Muslims in all aspects of their life. Muslims are required to understand the meaning of Al-Quran even through translations in their language. Al Quran is the source of dignity to Muslims (Che Ab. Aziz, 2011) and Imam al-Tabari concluded that al-Quran is a guide to mankind towards the right path of truth and the right way of living.

Pimpinan Ar-Rahman is the Malay translated version of al-Quran used by the Malaysian public, which is a completed by Sheikh Abdullah Basmeih bin Sheikh Muhammad Basmeih. The first volume of Pimpinan Ar-Rahman was published in 1968 in Malay *Jawi* deriving from 10 constituents, followed by the second volume in 1970 and the third volume in 1972. Then, it was translated into Malay *Rumi* and published in 1980. The latest translation effort undertaken by the Department of Islamic Development, Malaysia (JAKIM) included the Chinese and English languages.

Research on al-Quran and its translations in various languages have been conducted extensively in many parts of the world including Malaysia. Even though al-Quran and its translations was actively investigated from various aspects, this paper focuses on their retrieval performance from its multilingual script perspective.

The main aim of this paper is to present on the issues of evaluating the retrieval performance of the multi-script indexing of translated texts of Al-Quran. Objectives include to examine the reported retrieval performance of these texts and to evaluate the retrieval performance of the translations available in two different scripts of a language: Malay *Rumi* and Malay *Jawi*, built upon *Pimpinan ar-Rahman* version, Indri and *Jawi* software.

2.0 Related Research

Translations of al-Quran has played a major role in the recitation of al-Quran in its original texts and understanding through the translated words, among the public. Even in querying, non-Arabic speakers will find the texts through the translated words in addition to topical search. Transliteration is a need in the absence of terminology in the normal conduct of Cross-Language Information Retrieval research area, while in the case of this research, the transliterated version was meant for those with the ability to read the older script in its own original translation. The Malay Roman script has its own version of the translation.

There was a number of research works conducted on the Malay translation of al-Quran. Ismail, Abd Rahman & Abu Bakar (2007) developed a web-based visualization system to visualize the similarity between root words in the Malay translation of Quranic documents where the term created in the processing of one term can be used as potential queries to search relevant documents in the Malay translation of al-Quran manually or electronically. Yunus, Zainuddin & Abdullah (2010) studied the adoption of semantic query (SQ) for Quranic documents to retrieve more relevant documents across languages.

In general, there was a number of research works conducted to examine the retrieval techniques of Quranic texts. Noordin & Othman (2006) have proposed a system design for retrieving Quranic texts and any knowledge that derived or cites Quran on web sites. Shenassa & Khalvandi (2008) created an evaluation system to analyze the quality of translation texts of al-Quran. Abu Bakar (2010) evaluated the accessibility and visibility of al-Quran websites by using Alexa software for determining the visibility volume and A-Prompt for determining accessibility to Quran websites.

3.0 Experiments and Results

Experiments were conducted by using queries from Frequently Asked Questions (FAQs) printed in local newspapers with answers given by the *ustaz,* which ensured the queries to be from the public with ready basis for relevance judgments. As for Malay *Jawi*, 50 FAQs were chosen from *Utusan Melayu* and for Malay *Rumi*, 50 FAQs from *Berita Harian*. Queries were formulated from these FAQs and used as keywords at the semantic level. Keywords were searched in Indri to retrieve relevant verses. Relevance judgment was made by a panel of expert.

Measures include recall, precision and overlap. Recall explains the performance in retrieving all relevant items, while precision describes the performance in rejecting non-relevant items. Overlap

exhibits the retrieval of items common in both sub-collections. Each of these measures was computed in both the Jawi Original and the Rumi Original collections.

Table 1.1 shows that *Jawi* Original and the *Rumi* Original collections obtained on average high recall, high precision and high overlap.

Table 1.1
Results of Recall, Precision and Overlap for *Jawi* and *Rumi* Original

Queries	Average Recall	Average Precision	Average Overlap
Jawi Original	0.96	0.91	0.73
Rumi Original	0.89	0.92	0.83

Findings revealed the major issues of standardized texts, translation and transliteration, text alignments, queries construction, question-answering relevance vs. topical relevance. Indri's performance is not a major issue, while the *Jawi* software requires improvement to a minor extent.

The Malay Rumi and the Malay Jawi original translations of al-Quran were of different versions, and standardization was challenging due to the need of alignment by meanings. The different versions surfaced from the manner translations were made, which could probably be from a secondary source for some of the texts. Standardization issues could be reduced if the translations were made from the original texts with reference to other authentic sources.

The transliteration was made based on the original texts; however, it differed in terms of spellings and handling of plurals. Different versions of Rumi and Jawi have different spellings and ways of handling the plurals, and thus considerations must be given at the level of queries formulation.

Since both the Malay Rumi and Malay Jawi collections must have their transliterated versions, text alignment was an issue. Queries had to be formulated in align with the transliterated corpus, which would be difficult for the users, in this case the public. However, this issue can be solved through list of suggested terms.

The queries construction has to begin with asking the right questions (FAQs). Most of these FAQs were written as problems put forward by the public, and in finding the relevant texts on behalf of them required an understanding of their problem. The search could not simply be selection of keywords, but keywords that derived from reading the whole problems posed. Thus the relevance judgments were used as the criteria that have also helped in searching with semantic.

The *Ustaz* responded to the problems through the provision of answers consisting of the verses and their explanation for further understanding at the public level. This way of responses called for the search results to be listed as answers rather than information organized as topics. The issue here was that this research work required the experts to decide on the intention to answer the questions rather than to inform the public who posed the questions. Several attempts had to be made in designing the appropriate procedure for relevance judgment in this research. The relevance judgment process had to be monitored to ensure that the intention was on the right track as the responses given by the *Ustaz*.

Overall, Indri supported the conduct of this research with no observed issues and errors. However, the Jawi software needs improvements in term of adding in the range of possible spellings in other versions. This service would assist users and even the system in formulating the right queries.

4.0 Conclusion

Evaluating the retrieval performance of texts with high level of semantic in different versions of a language and multiple scripts based on its real use was challenging. An appropriate procedure elaborating on the standard and well-established methodology is crucial in ensuring findings with credible interpretation. It is not a simple standardization of the texts through the use of software, with some worked on replacing letters and words in a built-in dictionary.

The way an evaluation conducted to suit the need of topical relevance has to differ from the way it is for question-answering process. Since evaluation to some extent is very much tied to the nature of tasks, the depth and breadth of answers should now be considered as important elements.

Overall, this research work contributes to the issues of handling test collections involving parallel corpus in the area of Cross Language IR facing the Muslim World.

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