

Developing a Centralised Approach for authentication of Online Quran with Assistance of Muslim Scholars

Zahida Parveen ^a, Samina Naz ^b,

Faculty of Computer Science and Engineering,
University of Ha'il Saudi Arabia (UOHSa)

^az.malikuoh@gmail.com , ^bs.nazuoh@gmail.com

ABSTRACT

The Magnificent Qur'an, the Muslims' sacred and the most authentic Book, was revealed in Arabic the most immense language all over the world. Prophet Muhammad (PBUH) upon who this book was revealed in twenty three (23) years make complete arrangements for its authenticity by transferring Allah's message to His Companions through reciting exact word by word preserving the accurate order. Nowadays with huge advancement in information technology (IT) the preferences are given to the new advance and smart devices for reading, reciting and memorizing the Quran instead of Printed copy of the Holy Quran that is considered more reliable and authentic. No doubt this advancement has make it easy to access the Quran anytime, anywhere for everyone but has open a real threat in the authenticity of digital Quran. In the past a lot of work has been done to define a proper mechanism for authenticity of digital Quran/online Quran, This paper is a step forward to the same process. It introduces the Centralised mechanism using blended approach of Digital signature and Zero-watermarking technique authentication of digital Quran. The skills to control the authenticity of digital Quran with the help of scholars can be challenging in the current situation. Now a days it is the big challenge for the users to identify the valid copy of digital (online) Quran .The Muslims everywhere in the world are facing deficiency of attentiveness in distribution of fake digital versions of Quran without acknowledgment of approved Muslims scholars. Muslims around the world individuals as well as groups have been putting huge effort to detect and eradicate illegal copies of Holy Quran. There should be one committee of Muslims scholars and IT experts which has both type of technological and Islamic knowledge about Quran. We therefore are going to propose digital Quran centralized authentication system by using latest authentication approach. The system is aimed to combining sophisticated knowledge of our outstanding Muslim scholars and extraordinary technological experts to provide the authentic, valid and error proof digital Quran to every Muslim.

Keywords: Digital Quran Authentication, Role of scholars in authenticity of digital Quran, Central authentication system.

1. INTRODUCTION

The Quran is the very last sacred book that Allah almighty sent down to human being for guidance through Prophet Muhammad (PBUH) about 1400 years before. The Glorious Quran is the unadulterated speech of Allah. The book has been reached to current age in its original and complete form from the era of Muhammad (PBUH) who scribes its text as it was revealed and verified its correctness after the written text was read out to Him. The recitation of Holy Quran is an integral part of Muslims worship and its authenticity is of utmost importance; therefore from the time of Holy Prophet Muhammad a lot of methods and

techniques were used to preserve the Quran (WhyIslam.com, 2014). No doubt, in the Quran it is clearly stated that, “you will not find the words of Allah ever changing,” or you will never find the practice of Allah ever changing (15:9, 18:27)(Aslam, 2016).

Muslims usually used to recite the Quran from printed copies (called Mushaf) that are considered the authentic one as all over the world the Muslims countries have their Law and order and special acts for printing the authentic and certified copies. In Saudi Arabia there is dedicated printing plant “King Fahd Complex for the Printing of the Holy Qur'an” that is the only plant to print certified and authentic book (Huda, 2015).

In the current day Information Technology ,everything is transforming from hardcopy to softcopy; therefore, the whole data and information is converted from printed format to digital one and so as the users have also changing their preferences. This revolutionary emerging of internet and smart devices has also influenced the spread of Islamic knowledge in a wide extent, and it urged Muslims to use it as digital and formally it had been allowed in 2012 by Awqaf, “Iftacentre” in Abu Dhabi by issuing fatwa that for reading Quran there is not just one specific way one can use any means or ways for reading Quran (Rym, 2012).

Internet is full of Islamic websites and the most searched term digital Quran/Online, The term digital Quran can be defined as “An electronic device is developed and dedicated for displaying the text of Quran or executing the audios in a digital format or serve the both “The term digital Quran can also be taken as the text of Quran that is processed as softcopy and distributed as a digital one. As keeping the originality and absolute correctness in the contents of digital copy is very critical and sensitive matter so it should be closely monitor, for the authentication purpose a lot of work has been done in many novel and state of the art researches, many authentication systems framework, proposals, prototypes and even the working software have been developed but still there is a lack and need for more diversity of solutions as this is a very critical and most important issue to be handled. There are thousands of Islamic and Quran related websites and applications which provide Digital Quran for reciting, reading and memorisation (quranlove.com, 2015) but the developers or owners of these websites and applications are not aware or not following any system or method for the authentication and specifically they don't have the direct approach to Quran scholars for the proof reading of their digital Quran copies which is a serious threat (Aamir et al., 2014). This research focuses on the role of Islamic scholars in a centralize authentication process. The Digital Signature and Zero-watermarking technique is proposed to be utilised.

2. MOTIVATION AND OBJECTIVES

The motivation behind this work came up from the fact that with the huge burst of internet users especially in Islamic world introduced the use of digital Quran even more then the printed one. It is a good sign and positively stated that digital media has make it possible to approach Quran at anytime, anywhere and in any form but these benefits bring with them a serious intimidation allied to making assured preventing digital counterfeiting, digital copyright protection, content-originality certification and authenticity proof, as a crucial condition for such a sacred and ingenuous religious text.

The main objectives for this research are:

- Centralise the authentication process of digital Quran Apps/Websites/Programs.
- To utilise the knowledge of Muslim scholars in authentication of Holy Quran.

- To propose the Frame work for digital Quran authentication system with latest technology and the best knowledge of Contemporary Scholars.
- Propose a mechanism that will assure the users that they are using an authentic and certified digital copy of the noble Quran

3. RELATED WORK

The process for ensuring the authenticity and integrity is now days prove to be an essential research line and many work have been done for this purpose. They have been applied to many projects, frameworks and approaches for authentication but the latest and best to be discussed is Zero-watermarking technique (Fajri et al., 2013) that is going to be one of our selected techniques.

The most closely related approach that has been referred in (Yasser et al., 2013) propose a methodology based on grouping of summations and Unicode bits and hence developed to produce the watermark key that can be used for authentication of digital Quran verses.

This Qur'an verse authentication framework has been used Zero-watermarking. In first stage, verse/s from online text documents are extracted, secondly, verses are proved to be present in Quran. Next, the zero-watermarking method is applied. The positive thing in this approach is that, it can apply on the verse/s that is without, partially or fully i.e. different amount of diacritics.

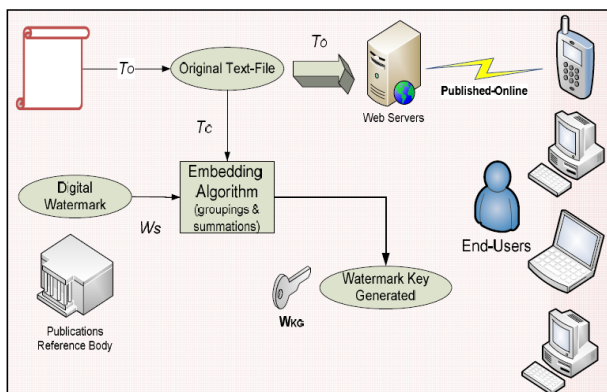


Figure 1 (a): Encoding Process Adapted from (Yasser et al., 2013)

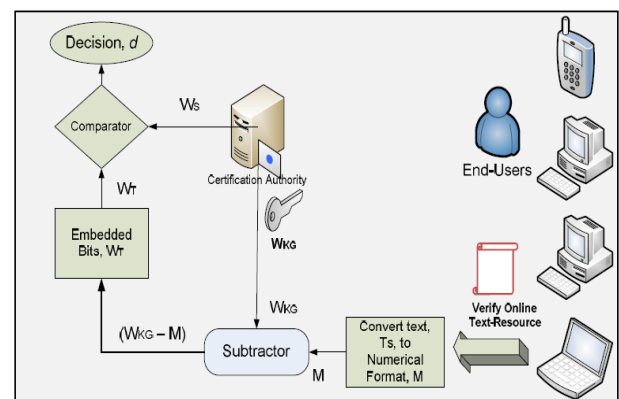


Figure 1 (b): Watermark Decoding Process

The framework as shown in Figure 1 above clarifies the process of watermark encoding and decoding for authentication purpose. After the matching and arrangement of the word-sets the original publisher embeds a digital watermark key (WS), in the copy of the cover-document referred as (TC). (TO) represents the original document. The Zero watermark technique in the said paper based on spread spectrum technique that is used to insert one watermark bit on each character of the provided word-set. This process generates a distinct key, WKG. The key WKG is secrete and only registered at a trusted third-party in the digital community referred to as certification authority (CA). This is all done during encoding process. The decoding process initiated with the end user request for a digital document authentication purpose, as shown in the Figure 1(b) the document to be tested (TS) is first

converted to numerical format (M). This numeric number is then subtracted from the CA stored watermark-key (WKG), that was generated during encoding phase. The result, WT, will recognize the unique embedded key (WS) by match up with the CA-registered key to confirm/reject document-ownership and confirm authenticity/integrity verification. In this approach the responsibilities are divided between document-owner and CA, former is responsible for generating and registering the watermark-key (WKG), and the algorithm with the CA, and later is there to verify the authenticity of the text upon user request (Yasser et al., 2013).

The system seems to be very good and reliable, but it is only initiated when there is a request for authentication, and further more a loophole in security is that the watermarking is done by the publisher that open a thread of tempering or counterfeiting, for our propose system the watermarking is done by the central DQCA, hence achieving the main goal of giving the user who recites from digital Quran a feeling of confidence and reliability that he/she is reading from an authentic source.

4. PROPOSED APPROACH

This paper is basically concerned with the authentication and certification of all the digital Quran copies that are online already available or to specify the rule for new publishers/website owners, that if they want to publish any digital copy of Quran they should get certification and get the permission for publishing verified copy of Digital Quran. This is so as the developers of the Digital Quran website/applications are the companies or individual who have not enough knowledge of Islamic rules and regulations and also they do not have direct and easy approach to Islamic scholars for the verification and authentication of their text. So it is the very crucial to have a centralised system that merge the benefits of Islamic knowledge and IT expertise's for the most needed purpose i.e. Digital Quran authentication.

The proposed system used the latest techniques, the combination of Digital-Signature and Zero-Watermarking approach for the authentication, protection and verification of integrity of Quranic text. As Quran is the word of Allah so the text should not be altered that's why the above stated techniques are used within the center under the supervision of Muslim scholars and IT experts instead of published/website owners so that the level of security that is needed can be achieved without any modification or changing in the original text anyway.

The aim for selecting these approaches is that we are primarily concern about the accuracy with good performance rather than secrecy in communication. The work is focused on confirming the originality and integrity, and also to detect any modification to certified data and identifying the actual publisher of the digital Quran (Omar Tayan et al., 2014).

The main purpose of the study is to introduce a centralised verification to Digital Quran Certification Authority (DQCA) which will be responsible for verification of the digital Quran and issue the authorised stamp to accurate copy and give the permission for publishing. The IT expert panel will be responsible for scrutiny and verification of already published digital copies. The center will also maintain a database for authentic and non-authentic websites for user/public reference.

The architectural framework Figure 1 and 2 of the system is composed of two major processes: Authentication Process for Publishing and Verification Process of Online Digital copies.

4.1. Authentication Process for Publishing

The process of authentication and stamping for publishing Figure 2 is initiated by the developer/owner of the digital Quran website or application who sends request for text authentication (T_R) to the central controlling body that is Digital Quran Certification Authority (DQCA).

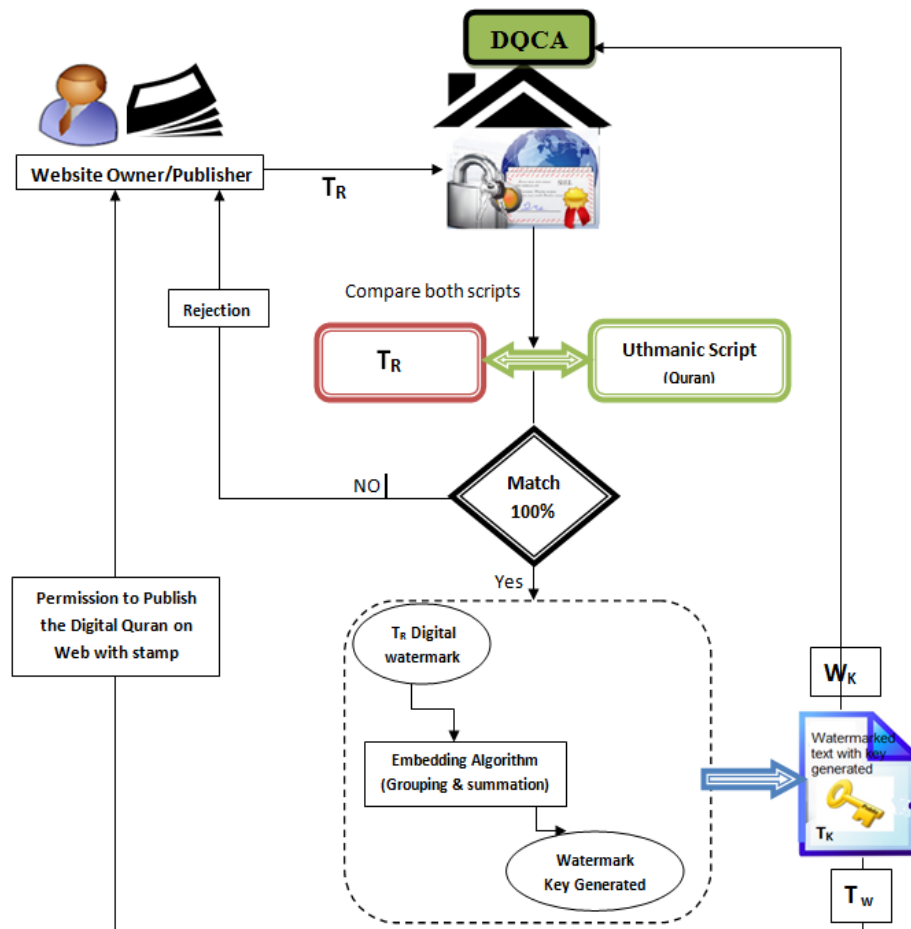


Figure 2: Authentication Process for Publishing

DQCA is responsible for comparing, verifying and issuing the certificate/stamp to publisher or developers to publish the digital Quran. After receiving the text (from publisher/website owner) to be water marked and authorized, DQCA with a team of Islamic scholars and IT professional starts its process.

Firstly the Text to be authenticated (T_R) is compare/match with Uthmanic Script Hafs (standard Quranic script) the font built according to the international coding standard following the blocks developed for Arabic characters the Unicode blocks from 0060 to 00FF.If the result of comparison is not 100% matched the refusal/rejection alert is send to the publisher/developer, otherwise if the matching result success and give 100% match the

process of watermarking and digital signature will be started. The paper implements the hybrid digital-signature and zero-watermarking approach that has been introduced in (Omar Tayan et al., 2014) for general sensitive plain text documents. The said approach will not only generate the watermarked text (TW) with key (WK) but also will issue a verification stamp logo by using digital signature technique. After this, the watermarked text (TW) verification stamp is sent to the publisher/developer with the permission to publish their website or application while the watermarked key (WK) is kept saved by the DQCA for testing and verification purpose.

4.2. Verification Process of available Online Digital copies

The process of checking and verifying the already available Digital Quran copies is done by the IT experts' panel. The panel is responsible for on a regular basis, searching and investigating all available programs or websites containing digital Quran text, perform the necessary testing and verification and then keep maintaining the database of authentic and non-authentic digital Quran copies. IT experts' panel is also responsible to notify the developers or website owners along with DQCA if any unauthorised copy of digital Quran is found. The checking and verification of integrity and originality will be the main liability of this process. It will be responsible for decoding the digital content and closely examine the water mark and stamp logo for verification.

The process is started with an input Text to be verified (TV), the decoding stage of watermarking started and first of all text (TV) that is needed to be checked for verification is converted to numerical format (N) for further processing. This numeric data is then used to subtract from the Watermarked key that is kept saved with DQCA to get the subtraction result (RS).

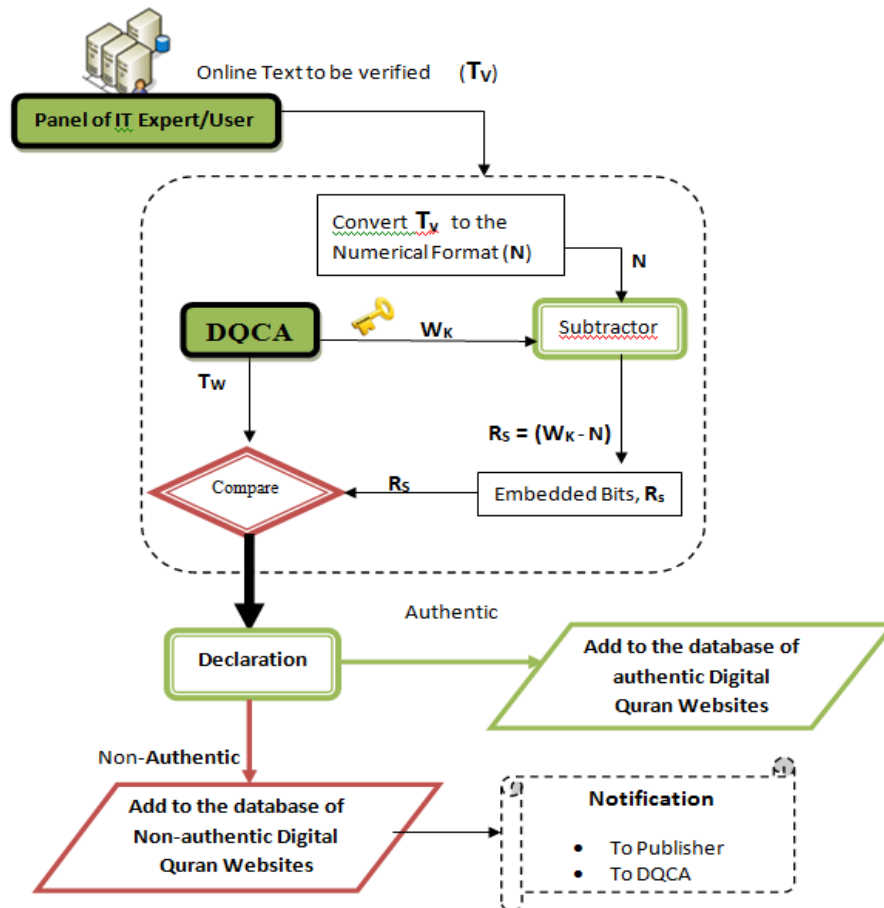


Figure 3: Verification Process of Online Digital copies

As shown in (Fig-3) the subtraction result (RS) is then compared with the water marked text available in database as well as from the DQCA. The comparison declares the digital copy to be authentic or non-authentic. If the result of comparison is authentic, then this website/program/application is added to the database with authentic status. On the other hand, if the result is non-authentic then the status of the website/program/application will be marked as non- authentic in database, in this way a database will also be updated containing the accurate evidence about the genuine and non-authentic digital Quran text for user, DQCA and IT team for reference. The process is ended by sending a notification to the publisher and DQCA for further action to be taken.

5. ROLE OF CONTEMPORARY SCHOLARS

The proposed authentication procedure introduces DQCA (Digital Quran Certification Authority). This can be a center whose members can be the Islamic scholars of present era to put their contribution in this critical issue. This is not to say that scholars have paid no attention in possessing the integrity and originality of Holy Quran but all these efforts have been made so far are restricted to printed versions. There are many qualified Islamic scholars in the whole world, as Table 1 shows the present list of Muslim scholars in Saudi Arabia (Aftab et al., 2016; Wikipedia, 2016).

Table 1: Contemporary Scholars in Saudi Arabia

Name	Birth Year	Education	Special Contribution
Muhammad Al-Munajid	1960	Islamic Law, Bachelor's degree in Industrial Management	<ul style="list-style-type: none"> • Website owner IslamQA.info
Saleh Al-Fawzan	1933	Master's and Doctorate in Fiqh	<ul style="list-style-type: none"> • A member of the Permanent Committee for Islamic Research and Issuing Fatwas • the head of Saudi Arabia's Supreme Court of Justice • a member of the Council of Senior Scholars
Muhammad Muhsin Khan	1927	Doctor and author of Pashtun origin	<ul style="list-style-type: none"> • English translations of Sahih al-Bukhari and the Qur'an, entitled The Noble Qur'an
Abdul-Azeez ibn Abdullaah Aal	1943	Islamic scholar and grand mufti	<ul style="list-style-type: none"> • Head of Sunni Jurisprudential Committees • Chairman of the Permanent Committee for Islamic Research and Fatwas • Head of the Presidency for Scientific Research and Religious Edicts • 1000+The number of audio Fatwas and lectures on his website
Abdul Rahman Al-Sudais	1960	Bachelors' degree in Sharia Master's in Islamic fundamentals Ph.D. in Islamic Sharia	<ul style="list-style-type: none"> • Al-Sudais is the chief of the Imams at the Grand Mosque of Makkah • Al-Sudais is also popular for his sermons and stance on peaceful conflict resolution • Assistant professor at Umm al-Qura University
Saud Al-Shuraim	1964	Master's degree in 1992. Ph.D. degree in fundamentals of religion	<ul style="list-style-type: none"> • Al-Shuraim is a leading reciter of the Qur'an • Imam of the Grand Mosque in Makkah • A teacher
Salman al-Ouda	1955	Graduated from the Faculty of Sharia and Religious Principles	<ul style="list-style-type: none"> • 53 published books and Supervises all the contents of the website IslamToday.net • Addresses Islamic issues on the Saudi satellite channel MBC. • Following of over five million fans on Facebook has over nine million followers on Twitter.
Rabee al-Madkhali	1931	Bachelors, Masters and Doctorate in faculty of Sharia	<ul style="list-style-type: none"> • Head of the Department of Sunnah in the Department of Higher Studies • Authored over 30 works in the field of Hadith and Islamic sciences

The above listed scholars have excellent knowledge of Quran and Hadith; their knowledge can be better utilised to mitigate the problem of uncertainty in the digital available copies of Quran.

6. CONCLUSION

In conclusion, at present, continues expansion of IT and internet services it is very important to have the authentic and original information especially when it is the matter of religious teachings. The authentication process for digital Quran is both critical and challenging; therefore, we need a solution that is 100% accurate in all aspects. In this paper, we proposed an approach for authentication of Digital Quran apps, websites and programs using a centralised system. The system introduces DQCA as an authorised certifying body to regulate the development and distribution of authentic copies of digital Quran. This work includes the modern techniques, the blend of digital signature and zero-watermarking to make sure that only the verified and trusted copies can be published on internet. The paper further proceeds by checking and verifying already available digital Quran copies and provide the valid solution to mitigate the issue of fake or tampered copies. The system is aimed at keeping a database record of all authentic and non-authentic digital Quran Apps/websites/programs so that the users can be more satisfied and confident enough as they are reading the correct and authenticated text.

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