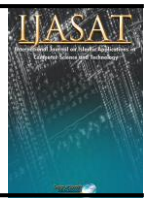

Authentication Systems of Digital Quran, a Review

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ABSTRACT

The progression in data innovation has empowered the expansion of electronic adaptation of the Holy Quran. Numerous designers have thought of the electronic adaptation of the Blessed Quran which can be perused online on PC or on cell phones .While such expansion empowers more extensive spread of Islam. The coming of electronic variant of Quran and an expansion of Quran learners around the world have come about the innovation of number of IT (Information Technology) applications that facilitate the recovery of learning from the Quran, being the significant wellspring of credible and un-changed Islamic learning. The presentation of electronic form of the Holy Quran likewise acquaints a prominent risk with Islam. Electronic variant of fake or false Quran has been identified. The likelihood to safely validate electronic variant of the Holy Quran would unravel a greater part of the dangers. This study introduces a far reaching review of cutting edge, discourse, and an examination study of works led here. An answer is critically expected to give a decent substance security, and respectability of electronic adaptation of the Holy Quran. This study closes by abridging issues, strategy and prospects for verifying electronic adaptation of Quran.

***Keywords*: Holy Quran; verification; security; Authentication systems; electronic adaptation.**

1. INTRODUCTION

The Holy Quran is the decisive and final Word of Almighty Allah a message to all humanity. According to the order and organization, it is a collection of 114 chapters surah's that were revealed to Prophet Muhammad by revelation through the angel Gabriel over a period of 23 years (610 CE to 632 CE). The Prophet (saw) was 40 years old when the Qur'an began to be revealed to him, and he was 63 when the revelation was completed. The language of the original message was Arabic, but it has been translated into many other languages.

Each revelation was written down by the Prophet's scribes according to the Prophet's instructions. Additionally, the Prophet and many fellow Muslims (sahabah) had committed the entire Quran to memory to keep its integrity and originality. The practice of memorizing the whole Quran continued throughout the centuries. There are thousands of such Muslims who learn Quran, known as Hafiz, usually one for each Mosque in Muslim countries; they preserve the authentic Quran in their memories (heart). There are two most famous ideas about the meaning of `Quran`, which shows the importance of its reading.

- It is determined from al-Qar` meaning `to collect`. So, it is called `the Quran` for it is a Book **to be recited** (73:4), or because the revelation began by `Read` (96:1).
- It is determined `Qara` (to recite). This opinion (driven from the root **'to recite'**) seems more accurate.

So it is obvious that Quran recitation is compulsory but there is no restriction in the form of media used for reading. Now adays mostly people desire to read online digital Quran, if anyone interested for online reading Quran, it's absolutely right. Different Islamic scholars have proven in 'Fatwa', the reading online Quran is more betters than not to read Quran. There are many ways and tools available for Digital Quran. Anyone could have read it on several smart devices, mobile, TV, or even the laptop. The Qur'an has not been expressed using any mankind words. Its wording is letter for letter fixed by Allah. It is a responsibility - and blessing - for all who listen and read the Qur'an to investigate it and evaluate it for authenticity by them. Allah (swt) has guaranteed the protection of the Qur'an from human tinkering, and readers can find exact copies of it all over the world. The Qur'an of today is the same as the Qur'an revealed to Muhammad (saw) 1400 years ago.

The Quran itself provides us with the test of authenticity and offers challenges against it to prove its genuineness.

The Quran is the heavenly religious book for more than one billion Muslims around the globe .It is the primary rule to allude and apply when there are contrasts or social or religious issues among individuals .It is the supreme discourse of Allah, clarifying what is correct and what isn't right, recognizing truth and misrepresentation. The Quran speaks to Allah's power which can likewise be utilized to check the substance of hadith. Notwithstanding, because of the absence of research exertion and controlling power to address this issue, there have been some fake forms of the Quran exist and endeavors to make unauthentic Quran to undermine Muslims around the globe. It is a test for peruses to confirm whether a specific verse is valid or fake and to decide the precision of a verse because of unintended grammatical mistake blunders.

The illiteracy of the issues has prompted to different issues of illicit replicating and disseminating of advanced data, making it hard to control who has invalid duplicates of the digital Quran. Purpose of our paper is to provide critical review of already proposed systems and for this here we are discussing some of the existing systems.

2. LITERATURE REVIEW

System-1: Real-time interactive verification

A step forward in the process of digital Quran authentication is taken by (T.M El-Sakka, 2013). In the said paper a real-time interactive verification of Quran phrases is done online using Hafs recital as a reference. It has utilized Natural Language Processing for tokenization as the basis of their work. An embedded web service known as Accelerator is provided for web browser for the verification. One the most extensibility feature of Internet Explorer 8 Beta 2 is Accelerators, these accelerators enable user to access any online service in a quick way as a selection based search by just using a mouse.

The research is completed in three main phases:

1. Development of Holy Quran data
2. IE Accelerator developed for verification
3. Verification system developed [Preview +Full results]

The proposed system used digital copy of holy Quran using Hafs version 9 from the website after downloaded they manipulate and extracted in the database table, arranged in the form of 30 Parts, 114 Chapters, 6236 Verses and 604 Pages as they are in "Almadinah" mushaf. They developed IE Accelerator that do the verification from their website under URL: www.quranexplorer.info the name of the website is "Quran Verifier" the architecture of the above stated system is given in Figure 1.

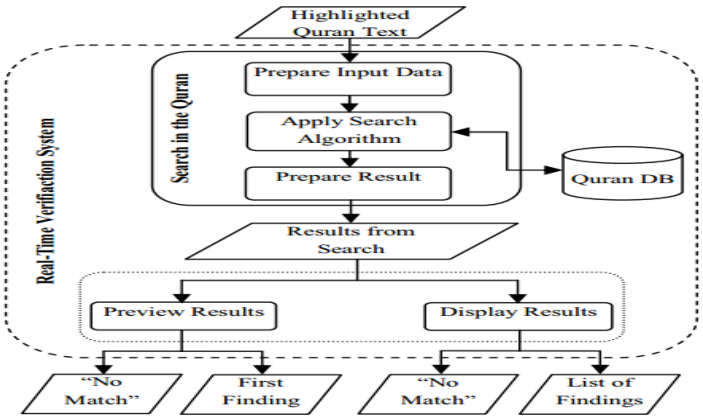

Figure 1: The architecture of verification system adopted for (T.M El-Sakka, 2013)

This system is very simple and easy to use by the reader or reciter for verification just with a single click of mouse. As it used only on digital copy as a reference for verification, so it limits the variety and hence can provide the wrong result even if the verses are correct, but not matching with the selected Mushef as there are many other authentic Mushef also available.

System-2: Online integrity and authentication checking for Quran electronic versions

In another similar system (Alsmadi, 2016) a tool is designed to evaluate the integrity of the wording of online digital Quran keeping the location and counts similar generate a Meta data for all words of the Quran**.** Such Meta data can be used in the similar manner as hash algorithms. Hashing is flexible according to the structure of the holy Quran; it can be generated for the complete Quran, for chapters or even for verses. The main goal as stated in this paper is to continuously monitor the internet and investigate any tempered or fraud in the copy of Quran, hence maintains the authenticity and integrity of the holy book by focusing on integrity checking rather than the encryption.

The proposed system worked in three phases:

1. Choose MD5 hashing algorithm due to its popularity and reliability
2. Code the authenticated Quran copy (with Tashkeel and without Tashkeel versions) using the MD5 hashing algorithm
3. Develop similarity check algorithm to retrieve verse that match the verse in question
4. Develop a searching tool that surfs the web to identify websites that are citing authenticated/unauthenticated Quran verses by using customize crawler.

The chosen system also create an indexer that includes all the verses from the website name: Islam web the indexer contain one verse with the information its chapter, content,

sequence number, number of characters and the MD5 hash value. As the total number of verses in holy Quran are 6236, so as the total same number of hash items are stored in hash table. The authors did many worthwhile experiments which results in solid conclusions and decisions like:

- The same hash function should be used in the authentication system which based on indexer
- MD5 hashing algorithm is more reliable and it can detect alteration at a very small portion i.e. Tashkeels.
- As the hash values are generated randomly so a small variation creates a totally different hash value, which works on the principal of Boolean decision.

The problem in the program is that some of the verses are indexed by less trustworthy websites according to some particular metrics that some of those pages are associated to private or social networks that are managed by individuals lacking any authorized entity or institution.

System-3: Verification of Qur'anic Quotations Embedded in Online Arabic and Islamic Websites

This paper developed a Quranic verification algorithm to assist clients for the Qur'anic e-references over the Internet, and to give trust in the precision of the Qur'anic e-references. The proposed framework executes three phases, where every stage distinguishes any deliberate or accidental altering or twisting in Qur'anic citations utilized as a part of online content reports. At last, such a framework could help in warning an association/computerized distributer of any altered/misshaped Qur'anic cites posted on their sites and in the meantime give a rundown of checked/legitimate Arabic and Islamic sites that publish Qur'anic verses.

The utilization of Qur'anic quotes in online Arabic and Islamic records underlines the need for a Qur'an citation confirmation and verification methodology. Typically, Qur'anic quotes in online reports show up amongst brackets and the reference, Surah name and Ayah-number are given after the citation.

The approach utilized as a part of this paper comprises of three phases.

1. The primary stage starts with the extraction of the information, i.e., the Qur'anic citation (more often than not a verse (Ayah)). Contingent upon the way the article is composed, the content is separated either naturally or physically, then the surah name and ayah number are checked so as to take out any fault during the section/writing procedure of the article.

2. The second stage includes the expulsion of the considerable number of diacritics and Tashkeel keeping in mind the end goal to channel the key content (e.g. characters containing the words) inside the verse.

3. At long last, the third stage includes the check procedure: The Unicode representation of the characters is utilized to confirm the essential content against the first Unicode content of the Qur'an with a specific end goal to validate the key content of the Qur'anic citation. From that point, the diacritics and Tashkeel are confirmed, and on account of any altering or misallocating of any character or image, the Qur'anic citation is viewed as invalid, in any case if the major content is credible or not (Yasser

Alginahi, 2013). The proposed Quran citation confirmation and verification framework is appeared in Figure 2.

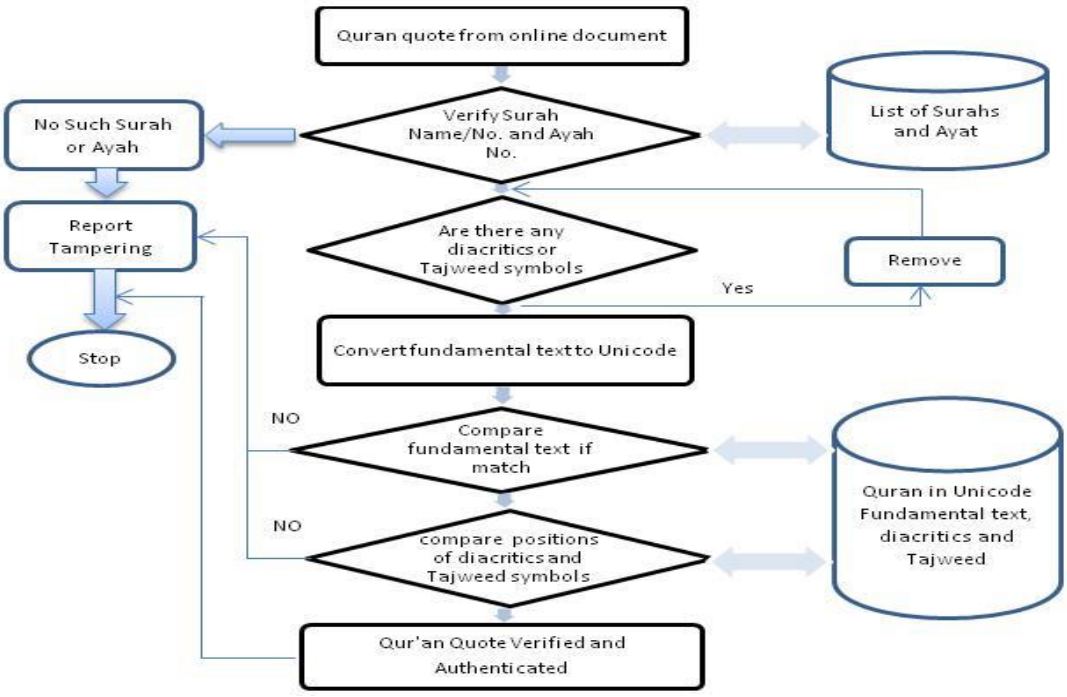

Figure 2: Architecture of verification and authentication system (Yasser Alginahi, 2013)

System-4: Authentication of Electronic Version of the Holy Quran

This paper discussed that King Fahd Complex for The Printing of The Holy Qur'an has been assuming the main part as a power on the Holy Quran and its sciences, giving interpretation of its implications and recording its recitation. It is unequivocally recommended that the printing complex to take up extra part in perceiving the significance use of data innovation by giving the validation system as proposed in this study. Be that as it may, to actualize verification instrument is not a simple errand and might take years.

As a fleeting measure, this study recommended that King Fahd Complex for The Printing of The Holy Quran to create applications identified with the Holy Quran for cell phones. Presently, King Fahd Complex for Printing the Holy Quran is giving electronic download of the Holy Quran in two configurations; (1) AI vector organization, and (2) TIF design (King Fahd Complex, 2013).

Since King Fahd Complex for The Printing of The Holy Quran gives genuine electronic adaptation of the Holy Quran distinguishable on PC, downloadable in AI vector and TIF design and additionally recitation by different Muslims researchers, there must be a forceful promoting effort to urge Muslims to use these administrations as contradict to comparative items from unauthentic sources (M. Hilmi et al., 2013).

System-5: Securing the Digital Script of the Holy Quran on the Internet

In this existing system (Mostafa, 2013) to secure and verify the digital Quran agent based security system were used. The proposed framework depends on public key infrastructure (PKI) and digital signature. It exploits public key cryptography (Rivest et al., 1978; ElGamal, 1985; Saeki, 1996) to accomplish its objectives. The proposed framework accept to have a notable Islamic Institute, e.g. Al-Azhar or King Fahd Quran Complex (KFQC), to assume the part of the Authentication Agency that signs and confirms the substance of the Holy Quran script for a subscribed Holy Quran benefit supplier. Users can download an agent from the Authentication Agency to confirm the Holy Quran script contained in the pages accessible by the administration suppliers that is enlisted to the framework. The proposed framework was executed effectively utilizing (MsDotNet C#).

It is consist of two steps .One of which is Holy Quran content provider setup and the other one is Holy Quran content verification.

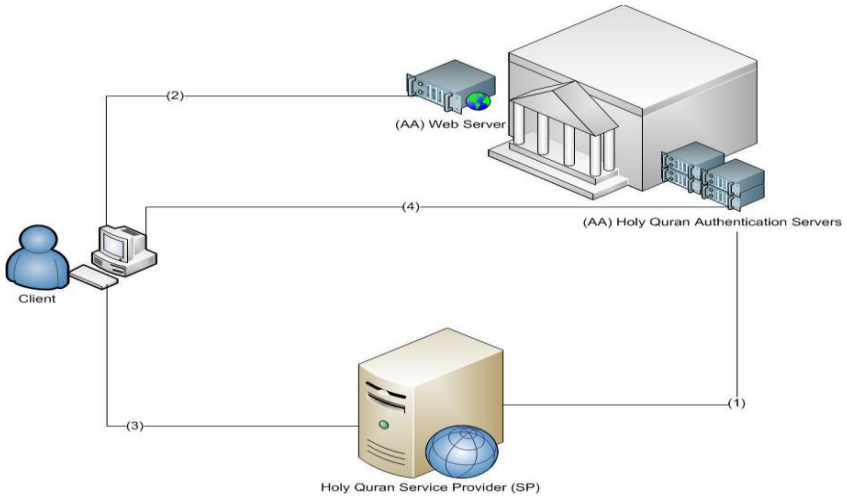

Figure 3: System Architecture (Mostafa, 2013)

1. Quran Digital Script Provider Setup Stage
   In this stage, Quran Content Provider follows the procedures to authenticate the Quran Digital script displayed at web-pages.

2. Quran Digital Script Verification Stage

The client accesses portal to download the Quran Content Verification Tool. Its purpose is to verify the Quran digital script displayed at any webpage possesses digital image. Its main task is to collect the displayed Quran digital script within the webpage and verifies its correctness online. If the displayed Quran digital script is incorrect, Quran Content Verification Tool notifies and blocks the wrong Quran digital script. Otherwise, Quran Content Verification Tool allows the correct Quran digital script to be displayed (Mostafa, 2013).

System-6: Standard electronic structure Holy Quran and digital authentication and Certification automation

This paper delivers a broad study of an information system to safe protected Quranic verses in Ottoman script and the various other authentic comprehensions. The Quranic text was electronically processed using the latest reformation XML information technologies, with its associated extents, and Unicode standard global coding. The system search Quranic verses by a search engine, which accepts deviations relative to coding, vocalization, readings, etc. It also provides automated Quranic verses authentication and certification using Web services and digital signature techniques. This framework gives a far reaching and expanded structure for a standard electronic variant of the Holy Quran, as a basic support to speedy and created PC applications, in numerous regions which utilize the Holy Quran as a source of perspective. As per set up grant in Quranic examines and without cure, two criteria were considered amid all phases of the rebuilding procedure: First, expulsion of all that is not Quranic appropriate and besides, responsibility to the Ottoman script and bona fide readings; and without ingather away by the country. The proposed framework additionally builds up a deliberate plan for the foundation of a guaranteed processing focus to enlist and verify naturally the Quranic verses contained in e-distributed writings, to encourage guarantee its integrity (Lezrek, 2009).

System-7: The Role of Information Security in Digital Quran Multimedia Content

This paper clarifies the essential and opportune part of data affirmation and related security systems concerned with the capacity, spread, proliferation and correspondence of online Quran sight and sound substance.

The quick development of the Internet and the World Wide Web proposes that more consideration is required for the security and insurance of online interactive media Quran content. This paper has exhibited the need to address security issues concerning advanced online Quran spread. The Unit of Information Security for the Holy Quran and Its Sciences at NOOR Research Center are applying endeavors in this space. Future work in this space incorporate; directing examination and studies on the utilization of data advances for distinguishing particular methodologies and for the disclosure of typographical blunders, and to endeavor to empower the NOOR Center or King Fahd Glorious Quran Printing Complex to wind up a tenable affirmation power (e.g. an accreditation power for all online Quran interactive media), which includes issuing computerized declarations of adherence to determinations and guidelines for those online clients who ask for substance check and certification (Omar Tayan, 2014).

3. CONCLUSION & FUTURE WORK

Different existing approaches and systems were discussed in this paper for the verification and authentication of digital Quran. All are using different methods and algorithms and their test shows very good results also .but not a single one provides a hundred percent reliability on existing Quranic versions over web. As a user of digital Quran still people have threats in their mind that they may use or recite fake or invalid verses of Quran. The Quran itself provides us with the test of authenticity and offers challenges against it to prove its

genuineness. so, still there is a need to develop such a system that provides complete reliability for e-citation of Quran to their clients over web.

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