

# Digital Humanities and the Future of Islamic Studies

## Introduction

In recent years, Digital Humanities have emerged as a transformative field, merging the humanities—which I refer to as “traditional” in the context of this paper—with computational and digital technology. This interdisciplinary field uses digital tools to analyse a wide range of textual, cultural, historical, and social information. Applying computational methods and digital tools to the study of religion offers unprecedented opportunities for innovative research methodologies, as well as for preserving and disseminating religious knowledge. This paper explores the current state and future potential of Digital Humanities in Islamic studies, examining how it reshapes “traditional” approaches and creates new possibilities for academic scholarship and public engagement.

## Digital Humanities

Digital Humanities is an important interdisciplinary field that uses digital technology to support, facilitate, and accelerate the analysis process in research within “traditional” humanities disciplines. It encompasses a wide range of methods and tools, including:

1. Digital archiving, which involves preserving and organising digital collections for easier and long-term access to texts and images.
2. Text mining, a technique that employs algorithms to analyse large volumes of textual data and extract patterns and themes that would be challenging to detect and analyse manually.
3. Social network analysis, an important method that examines relationships and interactions between individuals, groups, or entities to uncover social structures and connections.
4. Natural Language Processing (NLP), a field that helps computers

understand and interpret human language, allowing scholars to analyse linguistic patterns, word frequencies, and syntax to gain insights into language use in historical or literary texts.

By applying these tools, scholars are not only able to analyse larger datasets than “traditional” methods would permit but also uncover insights that may not be accessible through “traditional” academic scholarship.

## **Islamic Studies and Digital Humanities**

Islamic Studies, like the study of other religions, is a diverse academic field covering topics including but not limited to, theology, history, literature, philosophy, and cultural studies, and is currently undergoing a digital transformation. “Traditional” Islamic scholarship relies extensively on close readings of primary texts, particularly when focusing on early Islam. The rise of Digital Humanities is now transforming Islamic Studies by enabling unprecedented access to these primary sources, allowing for extensive analysis and overcoming many of the obstacles that once limited scholarly engagement with these materials. The field of Islamic Studies, particularly within academia, is experiencing a shift toward digital tools that facilitate complex analyses of vast textual collections, open access repositories of manuscripts, and collaborative platforms that connect scholars worldwide. In what follows, I outline three of the most significant and transformative contributions that Digital Humanities can offer Islamic Studies. In these sections, I will explore how digital tools are revolutionising fields by digitising Islamic texts, digital archiving, computational text analysis, and social network analysis. Together, these advancements, as well as other tools not discussed in this paper, underscore the potential of Digital Humanities to enrich our understanding of Islamic heritage and support innovative approaches to scholarship.

It is important to note here that I do not believe digital tools alone can analyse complex data to derive precise and meaningful insights from Islamic texts. Collaboration with specialists in Islamic studies is an extremely crucial part of the process. These tools become truly effective when used by researchers who

have a deep understanding of the patterns, concepts, and the cultural and historical nuances in Islamic texts. Islamic studies experts can use their knowledge to fine-tune algorithms and analytical models, ensuring that they accurately reflect cultural and historical realities. Therefore, only combining technical skills with in-depth knowledge of Islamic studies can lead to richer and more reliable outcomes in digital Islamic studies.

## **a. Digitising Islamic Texts and Digital Archiving**

Today, digitisation efforts by libraries and institutions worldwide are creating extensive online repositories of Islamic manuscripts and texts. For example, the Kitab Project ([kitab-project.org](http://kitab-project.org)) has digitised a substantial collection of Islamic texts, making them accessible to scholars around the world. Similarly, the Digital Library of the Middle East ([dlmenetwork.org](http://dlmenetwork.org)) offers open access to the cultural heritage of the Middle East and North Africa by bringing together collections from various cultural heritage institutions, including the Open Islamicate Texts Initiative (OpenITI), which was developed by researchers involved in the Kitab Project. With these digital resources, researchers are able to conduct complex linguistic analyses, compare manuscripts side by side, and map historical events across much larger datasets with significantly greater accuracy.

Digital archiving has become a crucial aspect of preserving and expanding access to Islamic manuscripts, due to advancements in digital tools. Leading institutions, such as the British Library and several organisations across the Middle East, are working on projects to digitise extensive collections of Islamic manuscripts. Furthermore, through Digital Humanities platforms like the International Image Interoperability Framework (IIIF), scholars now have the ability to examine high-resolution images of manuscripts, compare different versions side-by-side, and share annotations. Some projects are even focused on enabling direct text searches within these manuscripts, a feature that greatly enhances the accessibility of specific content.

Despite these advancements, digital images of manuscripts and other cultural

heritage materials are often stored within institutional silos, where each organisation relies on its proprietary software and metadata systems. This fragmentation poses challenges to researchers who need seamless access to collections across various platforms. IIF offers a solution through standardised APIs (Application Program Interfaces) that enable integrated access to images and metadata across diverse repositories.

Although IIF has been widely adopted by major libraries and cultural institutions, it lacks tools for navigating specific sections within manuscripts, making it difficult for users to directly access individual passages without scrolling through entire documents. The MUYA-IIF project, an initiative from the Multimedia Yasna project, is developing an IIF-compatible tool that allows users to annotate textual structures—such as titles, chapters, and verses—within manuscripts, in order to address this gap. This tool will empower scholars to document structural elements across different versions, create direct links between text structures and corresponding images, and streamline workflows through machine-assisted text segmentation. By combining metadata, structural annotations, and TEI-XML transcriptions with manuscript images, MUYA-IIF aims to provide an open-source solution that makes manuscript collections more accessible and searchable for research. As a result, digital manuscripts help protect these important documents and give scholars the opportunity to study how manuscripts travelled across different regions. It also adds valuable cultural and historical insights to Islamic Studies, which helps us to better understand the history and influence of these manuscripts over time and through various places.

## **b. Computational text analysis**

Digital tools for textual analysis are among the most significant and transformative resources for enhancing “traditional” manual scholarship in Islamic Studies. They create extensive innovative opportunities for textual analysis and interpretation. Through tools like Natural Language Processing (NLP), specifically customised to work with Islamic languages, scholars can now conduct large-scale analyses that were once time-consuming and labour-

intensive, uncovering historical insights that were previously tentative, unclear, or more importantly, inaccessible. With Natural Language Processing, researchers can analyse vast collections of *ḥadīths*, trace the transmission of ideas across different eras, detect recurring themes in Qur'anic exegesis, and examine the evolution of legal opinions across various Islamic schools of thought. These tools enhance the depth and scope of Islamic textual scholarship, providing new insights and broader perspectives. Such methods can be applied to various languages like Arabic, Persian, and Ottoman Turkish texts, offering new perspectives on language use, cultural shifts, and intellectual trends. Projects like the OpenITI provide a comprehensive digital library of pre-modern texts especially in Arabic-script languages, allowing for computational analysis that would be largely impractical with those “traditional” manual methods. OpenITI’s corpus spans a vast range of topics, from theology to poetry, and presents these texts in a sort of machine-readable format, facilitating sophisticated computational approaches to Islamic texts. Serving as an important model for future digital projects in the humanities, OpenITI demonstrates the potential of international, interdisciplinary collaboration in advancing the field.

### **c. Social Network Analysis (SNA)**

Social Network Analysis (SNA) is another valuable and important tool for studying and understanding relationships between people within historical contexts. In Islamic Studies, SNA can be used to map the networks of and relationships among Muslim scholars, *ḥadīth* transmitters, religious leaders, and even political figures, which can provide insight into how any Islamic knowledge, ideas, traditions, and *ḥadīths* were transmitted and disseminated across regions. By tracing these networks, researchers can see how religious texts and interpretations moved between individuals and regions. These network analyses can also help identify the impact of political figures on religious thought. This method provides a unique perspective on Islamic intellectual history, highlighting the collaborative and dynamic nature of knowledge transmission and uncovering patterns that may be missed

in “traditional” manual analysis.

Some prototype tools have been developed to make exploring these networks easier and more interactive. For example, *isnalyser*, an open-source program (<https://github.com/dhakarat/isnalyser>), can automatically generate *isnād*-tree visualizations that map transmission chains across time and place, helping scholars quickly identify influential transmitters without the need to draw networks manually. Similarly, *HadithGraph*, a web-based tool (<https://hawramani.com/hadithgraph/>), allows users to input specific *isnāds* and instantly produce dynamic diagrams of the transmitter network. By adding details about these narrators and the *ḥadīths* themselves, these tools allow scholars to study transmission patterns based on time period, location, or topic.

In addition to these specialized *ḥadīth*-focused tools, more general network analysis platforms such as Gephi (<https://gephi.org/>) can also be employed. Gephi is a powerful open-source software for visualising and analyzing complex networks, allowing scholars to work with larger datasets and customize visualizations beyond the limits of automated tools. It enables researchers to calculate centrality measures (e.g., identifying the most influential transmitters), detect clusters within transmission chains, and explore how sub-networks intersect across time and space. ((For an example of the application of this analytical model in the study of the history of Imāmī *ḥadīth*, see Mostafa Movahedifar, “Social Network Analysis and the Development of Imāmī Thought,” *Al-Qalam* 2, no. 2 (2025): forthcoming.)) While Gephi requires more manual data preparation than dedicated tools like *isnalyser* or *HadithGraph*, it offers substantially greater flexibility for conducting in-depth social network analysis of Islamic history and *ḥadīth* transmission. This network approach offers new insights in *ḥadīth* studies, especially for those studying *‘ilm al-rijāl* (the science of *ḥadīth* narrators), by making it easier to spot patterns and connections that may not be obvious in “traditional” studies.

## Some challenges

The use of digital tools in Islamic Studies is not always straightforward and

faces several challenges, which can be addressed in the future projects on Digital Humanities. One major challenge is the fragmentation of some digital resources: several institutions, especially those in Muslim countries, have created valuable databases of Islamic texts and manuscripts, but these are often restricted by institutional access or paywalls. As a result, scholars and research teams frequently end up creating similar databases from scratch, duplicating work that has already been done. This redundancy wastes both time and resources. If existing databases were openly accessible and well-documented, researchers could build on prior work rather than starting fresh with each project. Another challenge is the linguistic diversity of Islamic texts—including Arabic, Persian, Urdu, and Ottoman Turkish—which creates significant technical hurdles for developing effective tools, particularly given the complex scripts and grammar of these languages. However, several projects are working to tackle these obstacles. Additionally, many libraries in Muslim-majority countries, which hold extensive collections of important manuscripts, often lack the resources to digitise these materials, limiting access to a vast portion of Islamic heritage. Addressing these challenges will be fundamental for advancing Islamic Digital Humanities and making Islamic scholarship more accessible and collaborative.

## **Conclusion**

The future of Digital Humanities in Islamic studies holds immense potential to advance research and foster public engagement with Islamic heritage. By addressing key challenges and leveraging innovative tools, the field can become more inclusive and accessible. Achieving this vision requires collaboration among “traditional” Islamic scholars, Digital Humanities specialists, and computer scientists. To ensure the success of Digital Humanities in Islamic studies, academic Muslim institutions must invest in digital resources and training programs, while traditional scholars should integrate digital methodologies into their research. Technology experts must tailor tools to the specific needs of Islamic scholarship, and funding organizations should commit to supporting long-term digital initiatives. Moreover, engaging the broader

Muslim community in shaping these projects will be essential to their relevance and impact.