

**The Science of History and Artificial Intelligence:
‘Bridging the Past and Present through Historical Description and
Technological Embodiment’ the History of the Islamic West:
"Architecture and Battles" – as a Model**

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Abstract:

The rapid technological advancements have necessitated a paradigm shift in the study of history. Through intelligent technological programs that support scientific research, historians face new challenges in presenting past events and opening up new avenues. This transformation moves historical research from traditional methods to innovative approaches that involve delving into the past, analyzing historical events, and understanding all the changes that have occurred through artificial intelligence tools. These technologies allow for the recreation of historical moments by generating imagery and videos of battles and cities that once existed in the Islamic West but no longer do, using descriptions available about them. In this way, entire epochs, societies, and worlds can be reconstructed, offering a more immersive understanding of history beyond merely shedding light on past occurrences.

Keywords: History; Artificial Intelligence; Islamic West; Cities; Battles; Description; Reconstruction.

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1. Introduction:

When embarking on the task of gathering and synthesizing historical facts, researchers must actively engage their imagination to reconstruct the past (Rostom 2014). This notion was emphasized by Macaulay, who highlighted the essential role of imagination in historical narrative, asserting that it infuses beauty and effectiveness into the portrayal of history. Collingwood similarly underscored the importance of imagination, describing it as the essential, though often overlooked, faculty required for understanding the world around us.

For Collingwood, imagination serves as the intellectual framework through which historians build their narratives, relying on inference to fill gaps and render the past intelligible (Collingwood 1968). Thus, the historian's or layperson's natural interest in studying history stems from a fundamental human desire to comprehend the lives and events of those who preceded them, to imagine people and occurrences from distant eras. Since all that transpired in the past is inherently unknown to contemporary individuals, there is an innate yearning to discover and understand it.

As history belongs to the realm of scientific inquiry, the field of historical research is inevitably shaped by the broader scientific advancements of our time, particularly the emergence and evolution of artificial intelligence. In this context, one might ask: if a historian seeks to reconstruct the past through intellectual conceptualization, can artificial intelligence materialize this vision into a tangible reality, effectively depicting historical events?

2. The Science of History:

Al-Sakhawi offered a linguistic definition of history as ‘informing about time,’ noting expressions such as ‘I dated the book’ or ‘I recorded its time,’ meaning to mark the time of its creation. In its technical sense, history is the discipline that examines events in relation to their temporal context, analyzing the occurrences in the world and their impact on humanity across different periods. Its primary focus is to understand human actions and events in their true form, within the framework of time (Al-Sakhawi 1349 AH)

The term ‘history’ encompasses a broad spectrum of meanings. Some scholars interpret it as the study of the universe’s origins, including celestial bodies, planets, and Earth itself. This view extends to all events that have unfolded on Earth. However, the majority of historians associate history with the investigation of past events, emphasizing humanity’s efforts to describe and interpret these occurrences (Othman s.d.). As Professor Baraklav notes, history involves ‘the effort to uncover significant events from the past through partial evidence from earlier times.’ (Munis 1984, 34-35)

Ibn Khaldun’s understanding of history stands as one of the most significant expressions of this science in the Arab intellectual tradition. His approach, which has greatly influenced Western historians such as Toynbee and Collingwood, defines history as a noble discipline, rich in insights and of considerable importance. (Munis 1984, 60) He writes, ‘The art of history acquaints us with the conditions of past nations, their morals, the lives of prophets, the reigns of kings, and their political affairs, so that we may derive lessons from their experiences, both in religious and worldly matters. It requires a multitude of sources, diverse knowledge, and careful examination, leading historians toward truth and helping to avoid error and falsehood.’ (Khaldun 2001, 13)

Ibn Khaldun offers a profound interpretation of history, which aligns closely with contemporary scientific viewpoints. He posits that history provides a comprehensive picture, encompassing political, social, and economic dimensions of past events. (Rabee allah 2021) This is evident in his assertion: ‘In its apparent form, history consists of reports about past days, states, and the early centuries, during which sayings are born, proverbs

emerge, and discussions unfold in gatherings.

It recounts the status of caliphates and how their circumstances shifted, as well as the growth and eventual decline of states. However, beneath this surface, history involves reflection, investigation, and an exploration of the causes of events, delving into their nature and origins, providing a deeper understanding of their significance.’ (Khalidun 2001, 6)

Historians, both ancient and modern, have long sought to define the concept of history, presenting views informed by their diverse perspectives, particularly in terms of whether history should be regarded as a science. The study of history has garnered attention from thinkers across various cultures. It is understood as the discipline that investigates human history through the study of past events and the analysis of remnants left by ancient civilizations, such as artifacts, documents, books, and oral traditions. This includes examining all aspects of human life, political, social, and cultural, within their historical context and identifying the interconnectedness between these elements, revealing a unified and multifaceted whole. (al-Assari 2020)

Scholars have clarified that history is neither purely intellectual nor merely a process of transmission but exists as an intermediary science that bridges the two. Over time, history has evolved from a mere narration of past events to a highly specialized field with distinct subdisciplines, a development initiated by Muslim historians and continuing with historians worldwide. (Al-Nabrawi 1996)

3. Artificial Intelligence:

Artificial intelligence (AI) emerged as a significant field within the Fourth Industrial Revolution, which began to take shape during the 1980s and 1990s. This revolution is characterized by a convergence of technologies that dissolve the boundaries between the digital, physical, and biological spheres. It is also known for the rapid pace of innovation in scientific fields, particularly in AI, nanotechnology, robotics, blockchain, and quantum computing. (Al-Adwan 2018)

The term ‘Artificial Intelligence’ was first coined in 1956 by computer scientist John McCarthy, who is credited with defining and exploring its meaning. He described AI as ‘the science and engineering of making intelligent machines. (Amish: 2018) ‘ Simply put, AI refers to the creation of computer programs designed to emulate human cognitive functions, including learning from past experiences, self-thinking, continuous improvement, and diverse reasoning abilities.

These systems can generate responses to situations they were not explicitly programmed to address, allowing them to understand their environment and take actions that enhance their chances of success. This is achieved by leveraging their exceptional speed, perception, and capacity to process vast amounts of data, abilities far surpassing human capability, and making decisions in an extremely short time frame. (Ayash 2018)

In the 21st century, AI has reached a level of sophistication and specialization, resulting in the development of numerous subfields. It has addressed numerous challenges for researchers, providing successful solutions for managing incomplete and uncertain information. (Amish: 2018, 17) Today, AI is utilized across a wide range of sectors, including education, speech recognition, scientific organization, image analysis, medical diagnostics, vision systems, natural language processing, stock market analysis, automation, video gaming, search engines, problem-solving, and even creative endeavours. (Al-Adwan 2018, 23)

4. History and Artificial Intelligence: Between Imagination and Embodiment:

When early humans began recounting the stories of their ancestors to their children, blending these tales with beliefs and myths, history was born. The human mind began to conceptualize history in its earliest forms. Initially, the expression of historical events took shape in the form of drawings and carvings on stone. As human civilization advanced, history gradually evolved into a fundamental means of documenting human life, filled with events that have shaped humanity. Thus, history presents us with a variety of occurrences, ideas, works of art, and artifacts. (Hanbali 1969)

Macaulay, in his discussion of history, emphasized the importance of historians possessing a strong degree of imagination, which imbues their historical narratives with beauty and impact. Collingwood reinforced this idea, asserting that imagination is the essential, though often overlooked, faculty through which we uncover the world around us. He argued that imagination is a necessary condition for studying history, emphasizing that it is the imagination within the historian's mind, manifested through intellectual deduction, that serves as the foundation for all historical narratives. (Collingwood 1968, 417-418)

The true joy of studying history, whether for professionals or amateurs, lies in humanity's intrinsic desire to understand the past. This desire compels us to imagine historical events, the people who lived during those times, the buildings, the atmosphere, and every other aspect of life from the past. For every individual in the present, there exists a profound yearning to understand how their ancestors lived.

Although history belongs to the humanities, which are not typically subjected to experimental processes, it still demands reflection, examination, scrutiny, and critique. As Ibn Khaldun emphasized, history requires a wealth of knowledge, diverse sources, and a sharp, analytical perspective that leads the historian toward truth while helping them avoid errors and misconceptions.

While historical research achieved a certain level of sophistication during Ibn Khaldun's era (4th century AH), it has since undergone numerous transformations, particularly with the rise of the historical materialist school,

the French Annales School, and the American school of thought. However, one of the most significant developments during this period has been the revolutionary influx of information. (Boutchich 2000)

In the present day, artificial intelligence undeniably plays a crucial role in achieving what was once beyond human reach, enhancing both the scientific and practical dimensions of life. Among its many contributions is the development of advanced scientific programs that assist historians in framing new questions about the past. These programs offer alternative approaches and answers, thereby opening new frontiers for historical inquiry.

As is widely known, historical documents rarely provide a complete and coherent picture of past events. Instead, they present fragmented, incomplete, and often disjointed glimpses of history, which places a substantial burden on the historian. It is the historian's responsibility to fill in the gaps and address the inadequacies within these documents. (Mohammad Al-Huwairi s.d.)

In this sense, history heavily relies on the art and skill of the historian, who must breathe life into the past as though it were unfolding right before them. The ultimate goal of the historian is to restore historical events in their mind as they truly occurred in the past. This endeavour depends largely on the historian's imaginative capacity, as documents alone are insufficient for constructing an accurate representation of history. (Collingwood 1968, 423-424)

The historian must craft a vivid image of the past based on the historical sources they utilize. This image is not merely factual; it is one that emerges from the historian's imagination. What we aim to achieve in this research is to take that imaginative creation, formed within the human mind, and bring it into tangible reality, embodying it in such a way that it can be witnessed with the naked eye through the aid of artificial intelligence programs.

Among the most significant modern developments in artificial intelligence are tools designed to convert text into images. These tools work by analyzing the textual input provided by the user and generating images that most accurately correspond to the description. This technology enables

us to visualize scenes that may never have existed in reality. (Vidnoz AI 2024)

Some of the most prominent programs that convert text into images include, but are not limited to, Craiyon, sider.ai, Gemini, Leonardo, Artbreeder, Deep Dream Generator, Microsoft Bing Image Creator, Tengr.ai, Leonardo.ai, Haiper.ai, and more.

One of the goals of our research into the past is to visualize cities, battles, military tools, hotels, and other historical elements. By combining historical texts with artificial intelligence programs, we aim to recreate these aspects. We will select specific examples that have been clearly documented, allowing us to generate an accurate description that can be processed by one of the text-to-image or video AI programs.

5. Architectural Heritage and Battles in the Islamic West: Between Description and Virtualization through Artificial Intelligence

5.1 Urban Architecture:

The intersection of historical imagination and the study of urban history opens new avenues for understanding the unique architectural heritage of past civilizations. Urban structures are not merely remnants of the past; they serve as windows into the daily lives of those who once inhabited these eras. Through historical texts and artificial intelligence programs, researchers can reconstruct these architectural models in ways that offer deeper insights into the profound connection between humans and their built environment.

5.1.1 Cities:

Since the rise of Islamic civilization, Muslims have worked to establish cities that have left behind a rich history and marked significant events. The writings of Arab travelers such as Ibn Jubayr, Al-Abdari, Ibn Battuta, and others are filled with vivid descriptions of these cities and their beauty.

Geographical sources, such as those by Al-Ya'qubi, Al-Idrisi in *Nuzhat al-Mushtaq*, and Al-Hasan Al-Wazani's *Description of Africa*, along with foreign works and city maps drawn by the Spanish, Italians, and others during the late medieval period, provide valuable insight into the urban life

of the Islamic world, particularly the Maghreb. These sources have conveyed the grandeur of the cities' architecture, highlighting the customs and lifestyles of their inhabitants, full of wonders and curiosities. They have contributed to enriching our understanding of Islamic cities. (Al-Hassan 1999) (Al-Amrawi 2014)

Among these cities, we take Bejaia as an example of one of the Islamic cities in the Islamic West and input its historical description into artificial intelligence programs to recreate its image during the Middle Ages. We draw from the description provided by the author of *Al-Istibsar*, who wrote: 'It is a great city surrounded by towering mountains, with the sea bordering it on three sides, east, west, and south.

There is a road leading towards the Maghreb called al-Madiq, which runs along the bank of the river called Al-Wadi Al-Kabir. The road towards the Qibla leads to the fortress of Hamad. There is no road leading from the west... Bejaia is suspended from a mountain and juts into the sea, known as Misyun. It is surrounded by a mighty wall, and the sea strikes against its walls. It has two docks for shipbuilding... Bejaia is abundant in fruits and crops, and all kinds of goodness, with a clean, elevated location overlooking the sea.

The area is surrounded by mountains that extend for about ten miles. It is irrigated by rivers and springs and has many orchards. The city has a large river close by, within two miles or less, with many of its orchards lining the river. Water wheels are placed along the river to irrigate the gardens. There is a large park, and in Bejaia, there is a place known as 'Al-Lu'lu'a' (the Pearl), which is a promontory that juts out into the sea, connected to the city. It contains palaces built by the kings of the Sanhaja, the most beautiful constructions, with windows overlooking the sea.

The palaces are adorned with iron grills, arching doors, and finely crafted chambers, with walls made of white marble, covered in beautiful engravings and gilded with gold and lapis lazuli. The palaces also feature fine inscriptions and depictions of images, making them among the finest and most complete palaces, both in terms of beauty and function. This mountain, Misyun, is a towering peak that rises into the sky and juts into the sea. It is abundant with fresh water, many springs, orchards, and even inhabited by monkeys, as well as a species of wild animal known as the Dhurb.' (Unknown 1985, 129-130)

Figure 1: Model of Bejaia's Description via Microsoft Bing Image Creator

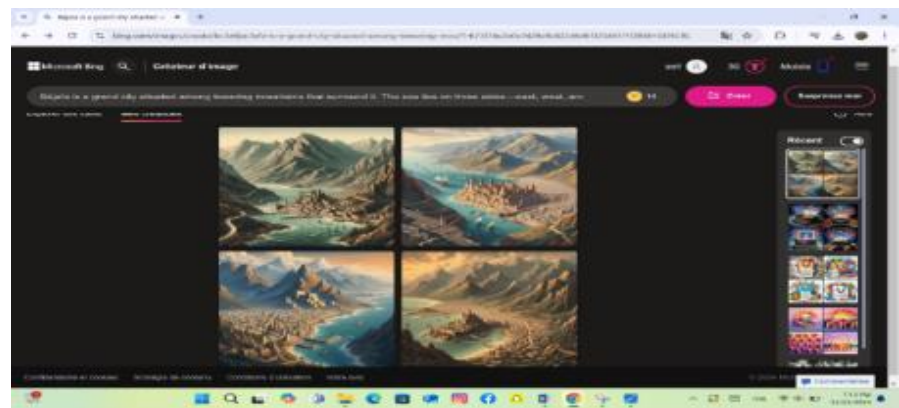


Figure 2: Model of Bejaia's Description via Tenger.ai

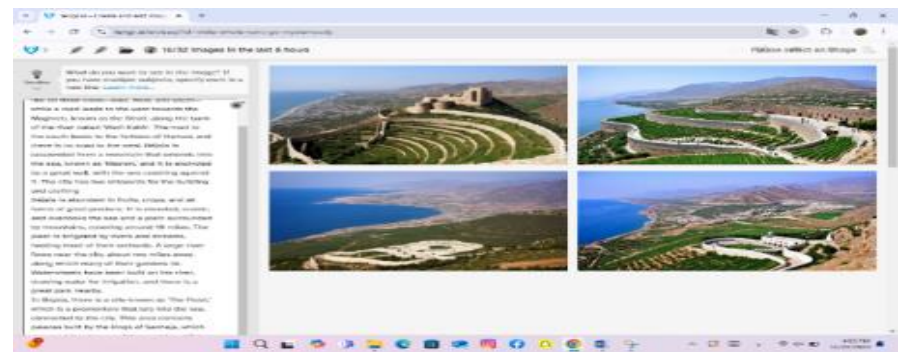


Figure 3: Model of Bejaia's Description via Leonardo.ai

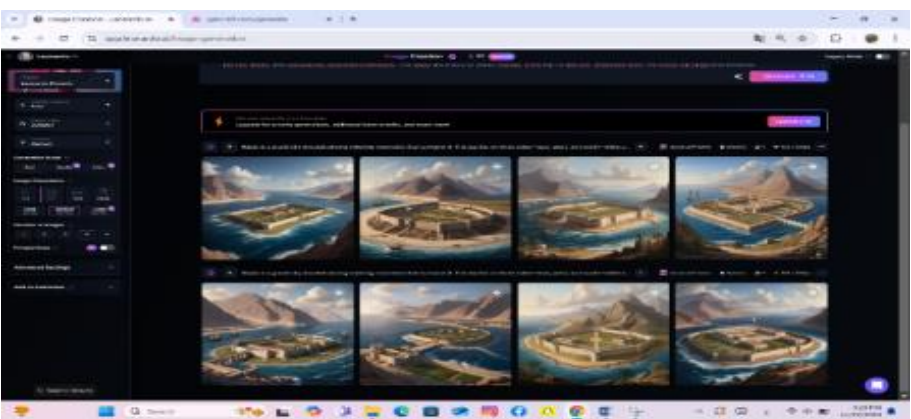
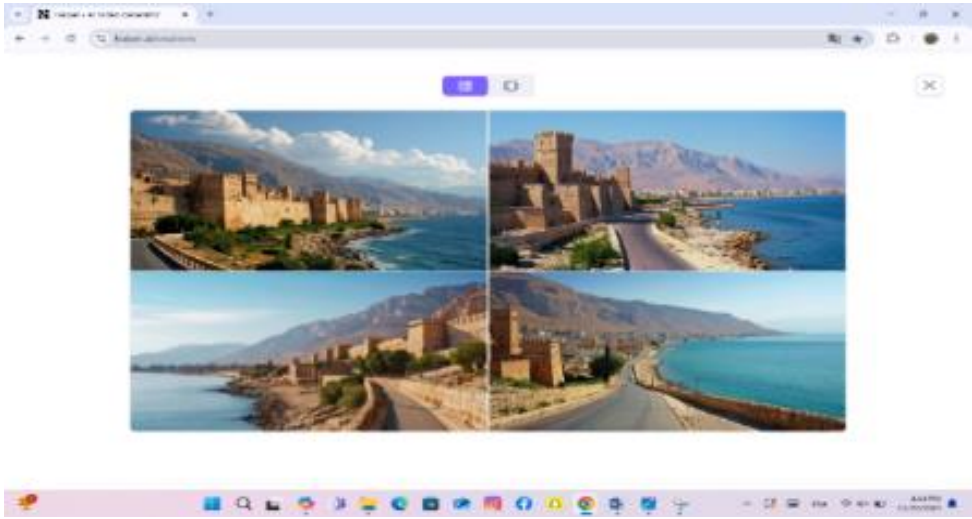


Figure 4: Model of Bejaia's Description via Haiper.ai



As a second example, we will examine the city of Tihert, adopting a more nuanced approach to its visualization. By breaking down the history of the city's construction into distinct phases, beginning with the initial selection of the location and the various historical accounts surrounding it, followed by the designation of the area and the construction of the city itself. This method allows us to break down these events into sequential visual representations—first as images and later as videos—assessing the extent to which artificial intelligence programs can bring the historian's imagination to life.

Description of the Arrival at the Site:

Abd al-Rahman ibn Rustam arrived at a square shaped clearing free of dense trees. The Berbers said: 'He has settled in TAGDEMT', meaning 'the tambourine,' as they likened it to the instrument due to its square form. When the time for the Friday prayer arrived, He led them in prayer at that place. After the prayer, a great commotion arose following the sudden appearance of a lion in the nearby forest. The lion was captured alive and brought to the site of the prayer, where it was eventually killed. In commemoration of this event, the people built a mosque at that location, using timber from the surrounding trees. This mosque still stands today as the city's grand mosque, consisting of four aisles. (Al-Bakri 1424 AH)

Figure 5: model depicting the arrival incident via haiper.ai

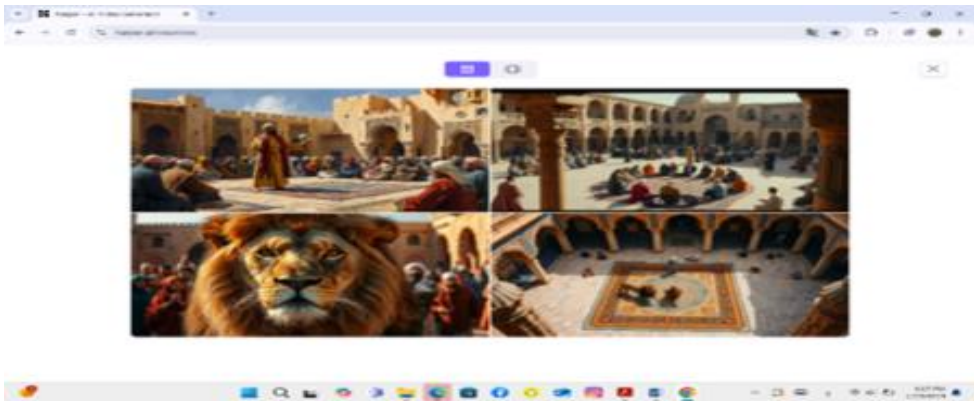


Figure 6: Model depicting the arrival incident via leonardo.ai

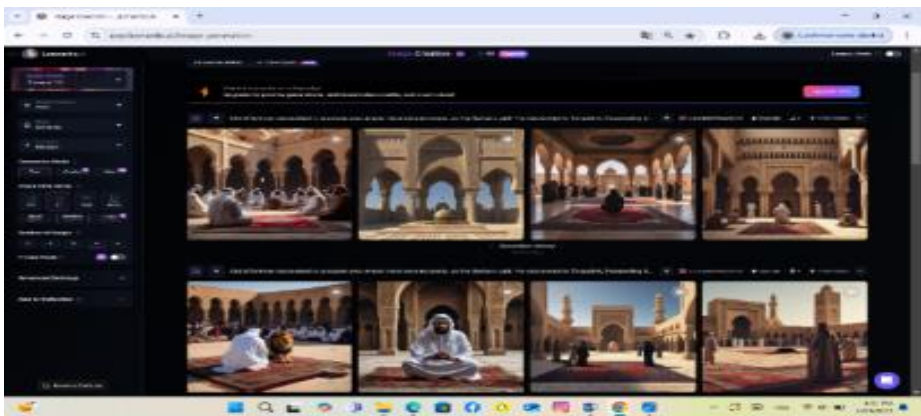
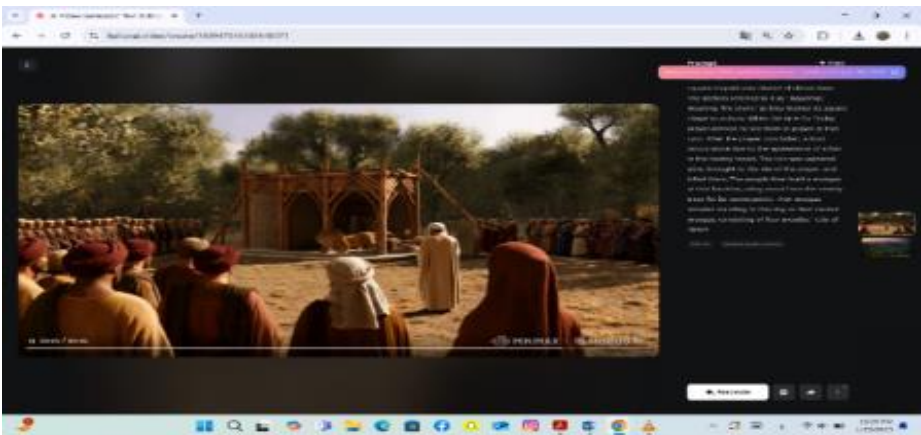


Figure 7: A visualization video of the arrival incident via hailuoai.video



Description of Land Preparation for Construction:

Tihert was once covered with dense wilderness and entangled trees, inhabited by various beasts and wild animals. The land belonged to a group of Berbers. Seeking to establish a fortified city for Islam, The Muslims, along with prominent ascetics and a community of believers, agreed on choosing a location to build a city that would be a fortress for Islam. Scouts were dispatched to explore the surrounding lands, and upon their return, they praised the location of Tihert. The Muslims reached a consensus to build it, And a specific sum was appointed for the city's tax, taken from its yield. A public announcer was then instructed to call out in a loud voice, addressing the wild beasts: **'Depart and leave, for we intend to settle and build upon this land.'** The creatures were given three days to vacate. It was reported that some saw wild beasts carrying their young in their mouths—presumably predatory beasts—as they left the dense wilderness. This sight further convinced the settlers of the site's suitability and strengthened their resolve to develop it.

At the end of the allotted time, fires were set to clear the visible trees, yet the roots and undergrowth remained. To address this, they buried *hays* (a mixture of dates, butter, and flour) around the city's perimeter. As night fell, wild pigs, attracted by the scent, dug through the ground, uprooting the remaining roots. (al-Shamaakhi 1987)

Figure 8: Model describing land preparation for construction via leonardo.ai

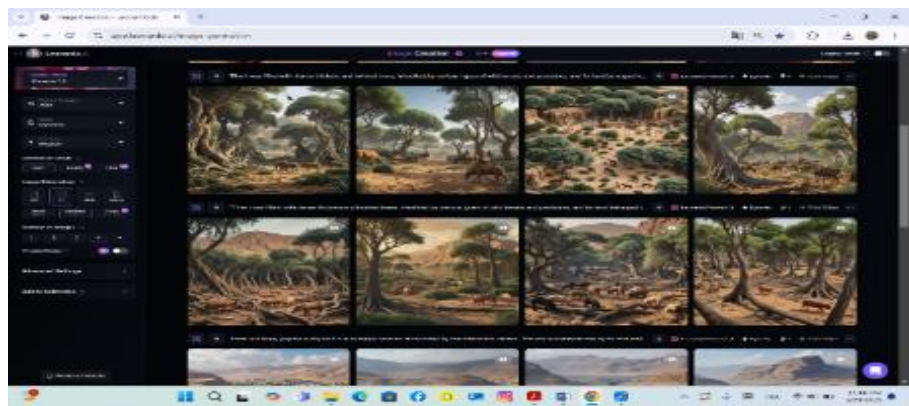


Figure 9: Model describing land preparation for construction via Tengri.ai

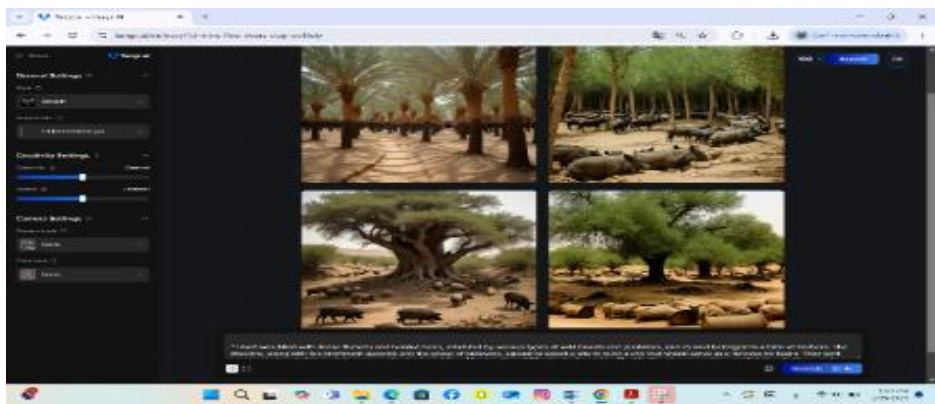
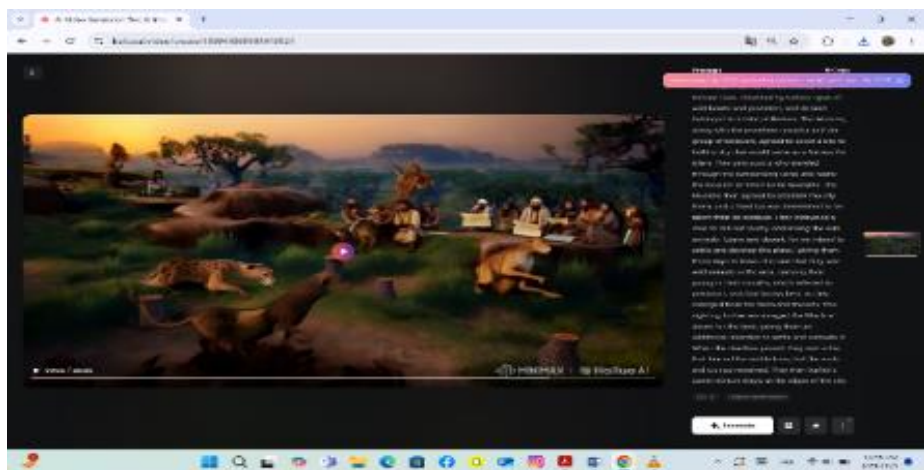


Figure 10: A video describing land preparation for construction via hailuoai.video



The City After Construction:

Tihert is a large, well-populated city established at a strategic location, situated strategically, surrounded by mountains and valleys. The city is known for its salubrious air and fertile lands, and a location that afforded both ample space for growth and security from enemy threats. Tihert's location at the juncture of hill country and desert afforded it the combined advantages of the fertile, temperate uplands and the pure, healthy desert climate.

The city is walled and has four main gates: Bab al-Safa, Bab al-Manzil, Bab al-Andalus, and Bab al- *Matahin*. Additionally, two rivers flow through it: one comes from the Qibla direction and is called Mina, flowing through the south of the city; the other springs from the Awn region and converges into a river known as Tatch, upon which the city depends on for drinking water of its inhabitants and for irrigating its orchards, and which flows in its east.

Tihert is abundant in fruit, and its quince is renowned for its beauty, taste, and fragrance—it is known as the 'Quince AL faris'. The city *had* a cold winter climate, characterized by frequent clouds and snowfall. t consisted of several neighborhoods, each with essential amenities and structures, including residences, palaces, and houses, along with public squares, markets, and mosques.

The city was built using wood and clay, and and was notable for its abundant flowing water and springs that reached most homes and irrigated orchards and trees. Tihert contained a citadel overlooking the market, known as Al Massouma, which served as the residence of the prince, his family, retinue, and troops'. The citadel housed buildings designated for this social class, had its own gates, and included a prayer area specifically for funeral rites.

Tihert served as a significant hub for caravans traveling from the East and the West, from the lands of Western Sudan, and from the desert oases. These caravans stayed in khans that provided lodging, storage for merchandise, and stables for animals. (Mottahari 2010) (Al-Bakri 1424 AH, 248) (Ibn al-Saghir s.d.)

Figure 11: Model describing the city via leonardo.ai

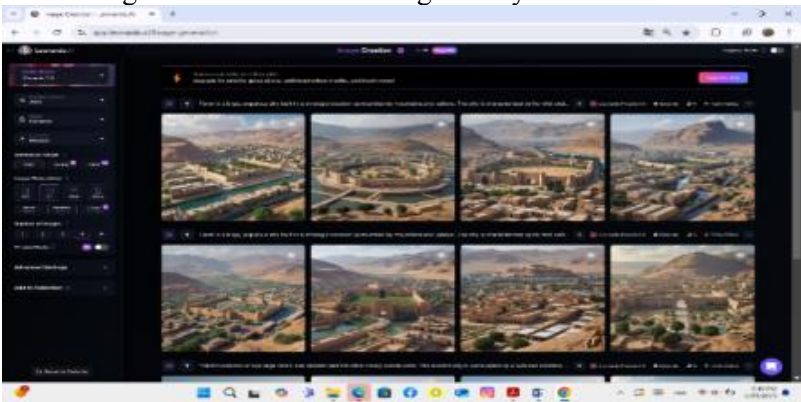


Figure 12: Model describing the city via tengri.ai

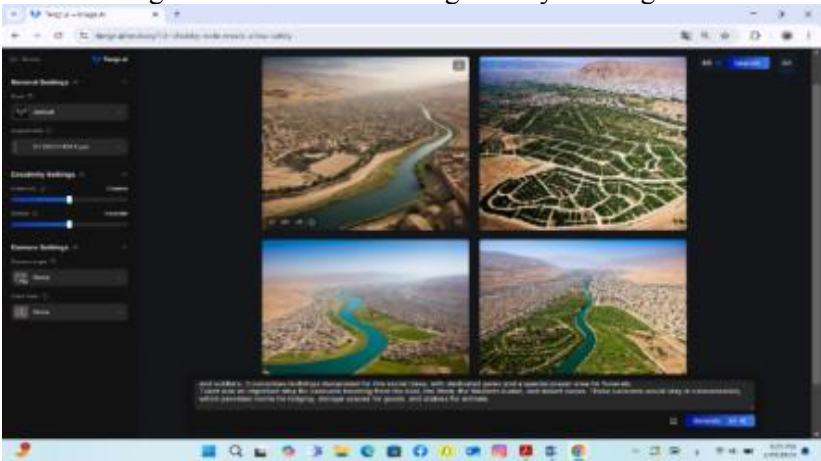


Figure 13: A Video of Tihert city via hailuoai.video



5.1.2 Hotels:

The active trade between Andalusia and its neighboring regions necessitated the establishment of accommodations where merchants could stay, particularly given the seasonal weather conditions that often required them to remain in port for extended periods, sometimes two months or more, especially during the winter months when transport was limited due to inclement weather, such as rain and strong winds. Upon arrival at Andalusian ports, merchants were in urgent need of hotel services to store their goods, both for customs processing and to protect them from theft or the elements. (Al-Jubouri 2012)

Hotels were reportedly plentiful in Andalusia, with an inn or guesthouse available every two or three miles along major routes. (Al-Ghasani Al-Andalusi 2002) Al-Idrisi notes that the number of hotels in Andalusia reached a remarkable thousand. (Al-Idrisi 2002) These establishments played a crucial role in the urban and economic life of the region, which is why they were strategically distributed across the main urban centers.

The scholar Abdulaziz Salem described the Andalusian hotel as follows:

‘The hotel in Andalusia, similar to what we see today in Marrakech, consists of a rectangular or square hall surrounded by corridors or passages that open into the main hall. Behind these corridors are the hotel’s rooms.

The ground floor is designated for storage and stabling, while the upper floor contains guest rooms and storerooms for goods intended for sale. The corridors are supported by wooden beams, connected by ropes, though in wealthier hotels, these beams were made of brick. At the center of the hall, a fountain is typically placed to provide water for guests. Access to the upper floor is provided by two staircases.

The outer walls of the hotel lack windows to prevent theft. The entrance is often a horseshoe arch, or a broken arch, akin to the Almohad style, with a rectangular frame adorned with ornamental designs. Behind this entrance, there is a hall or alcove with a domed ceiling or muqarnas. In hotels like the Granada-based ‘Hotel Al-Fahm’, the guest rooms are located directly above this alcove, with double-arched windows that overlook the entrance, allowing the keeper to observe the unloading of goods.

The arch system at the entrance, with its broken arch, is reminiscent of the Eastern iwans that first appeared in Sassanid palaces. The hallway leads to a door opening into the main hall, which is also flanked by a lintel, with a double-arched window situated above it. Andalusian hotels did not provide beds for sleeping; rather, guests slept on mats supplied by the hotel keeper, who also provided blankets. Guests were expected to purchase their food from outside the hotel.

The ‘Hotel Al-Fahm’ in Granada is widely regarded as one of the finest examples of 14th-century Andalusian hotels. Its gate, a masterpiece of Andalusian architecture, consists of three floors.’ (Salem 1985, 216-217) A central fountain in the spacious hall added to the comfort of its guests. Using this description, AI programs were employed to generate images of the hotel, with the following results:

Figure 13: Model of the described hotel via Microsoft Bing

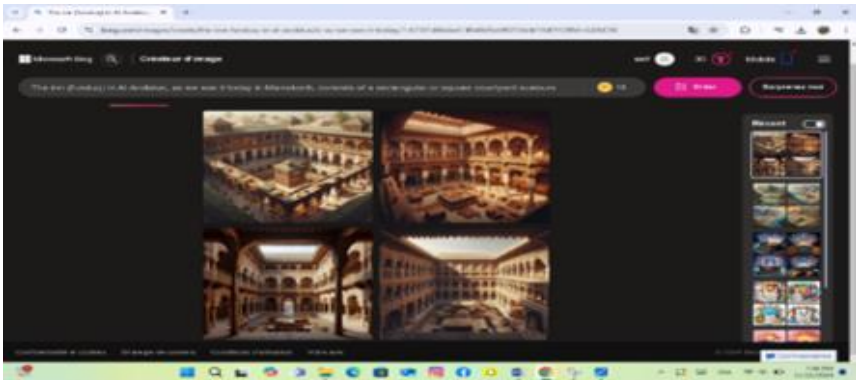


Figure 14: Model of the described hotel via Tengr.ai

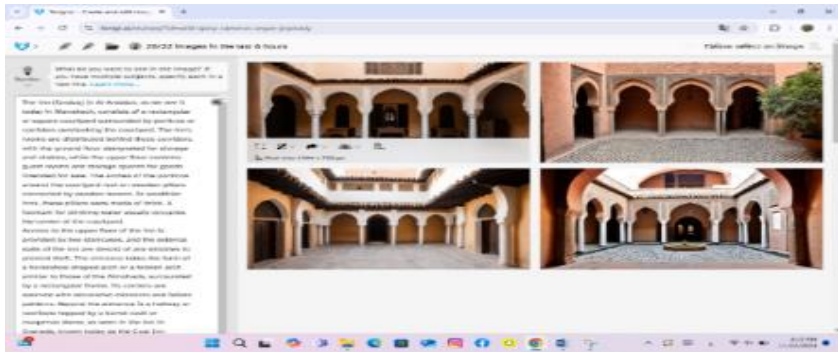


Figure 15: Model of the described hotel via Leonardo.ai

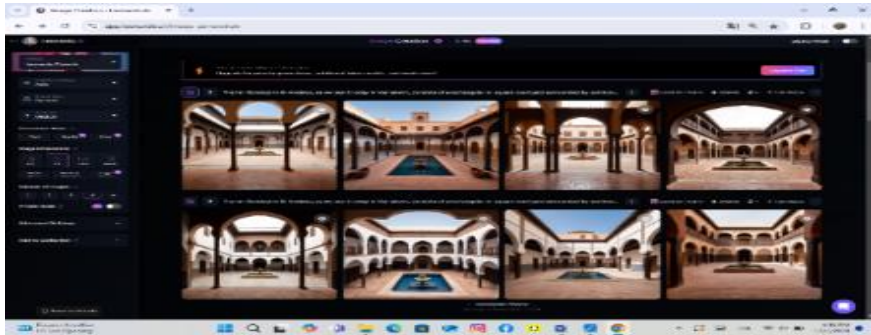
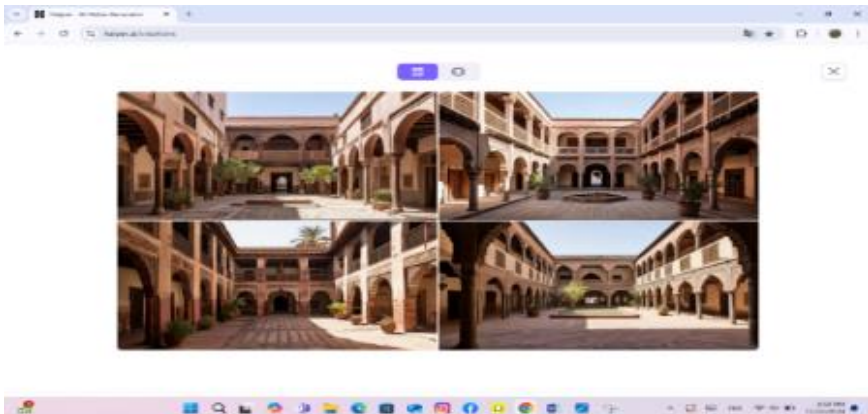


Figure 16: Model of the described hotel via Haiper.ai



5.1.3 The House:

One example of a traditional Islamic house is a 15th-century residence in Granada, which was preserved until the late 20th century before being demolished. This house is considered a representative example of Andalusian homes in the Middle Ages, and its description was input into artificial intelligence programs to visualize this historical depiction. The house ‘consisted of a square hall, each side measuring five meters.

The rooms surrounded this hall, with corridors on both the northern and southern sides. These corridors overlooked the hall and were supported by three arches, each resting on columns. The decorations on the northern and southern walls, facing the corridors, consisted of geometric and plant-based plaster carvings, featuring inscriptions such as ‘There is no victor but God’ and ‘There is no god but God,’ all intricately engraved into the plaster.

The door of the house was located in the northern wall, facing the courtyard, with three semi-circular arched windows above it. These windows were adorned with intricate floral motifs. A rectangular frame surrounded the windows, accompanied by a decorative frieze that repeated the inscriptions ‘Honor is for God’ and ‘Eternal life is for God.’ (Salem 1985, 186-187)

Figure 17: Model of the described house via Microsoft Bing

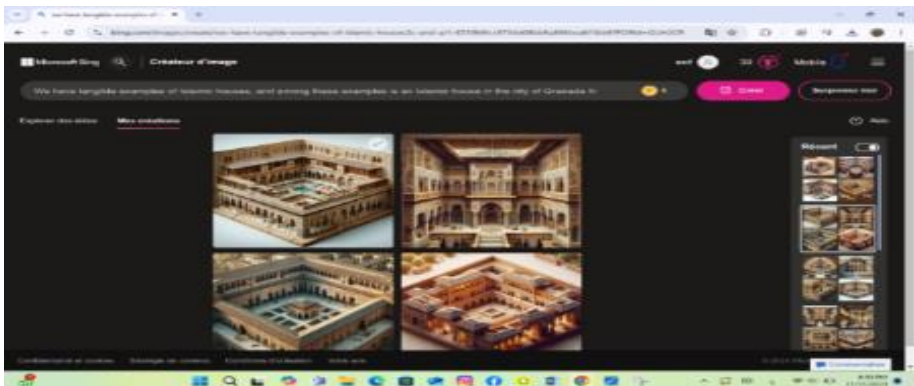


Figure 18: Model of the described house via Tengr.ai

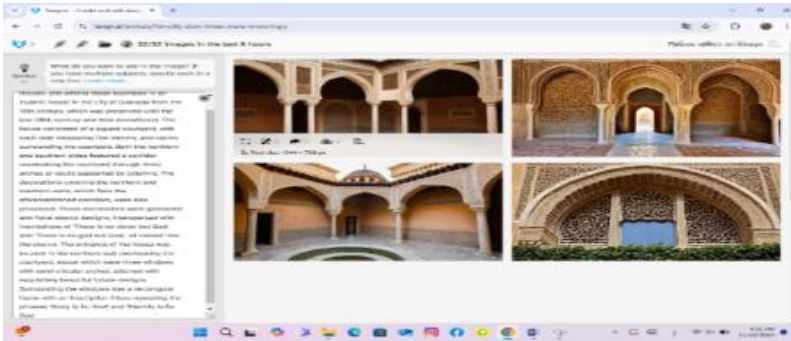


Figure 19: Model of the described house via Leonardo.ai

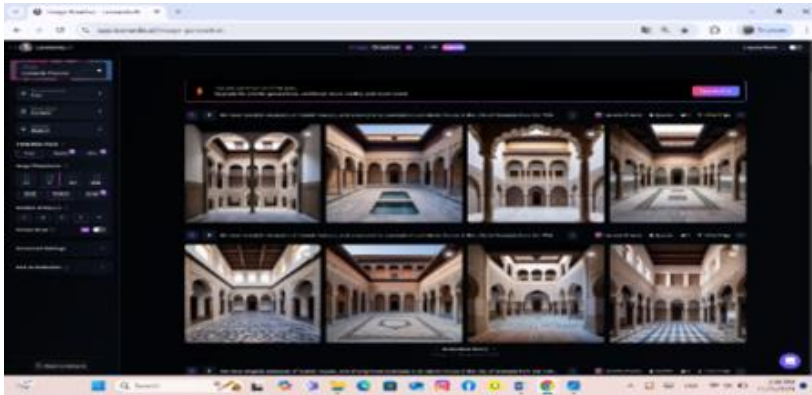
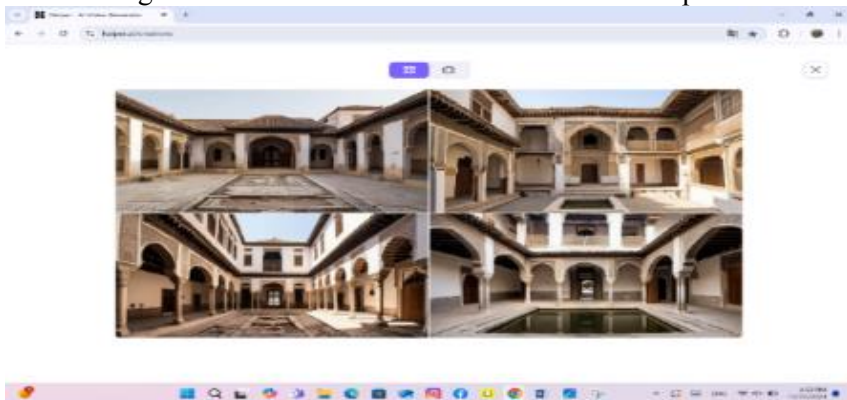


Figure 20: Model of the described house via Haiper.ai



5.1.4 Mosques:

The construction of mosques was integral to urban planning in Islamic architecture, particularly with regard to religious buildings. Islamic arts, in all their various forms, are deeply interconnected with the mosque, its construction, furnishings, and rituals. Mosques are seen as the houses of God, and their construction is regarded as one of the most significant acts of devotion to Allah. The role of mosques in the Islamic world extends far beyond serving as places of prayer; they became hubs for preaching, governance, administration, justice, learning, issuing fatwas, and other religious and worldly affairs. (Ismail Al-Haddad 2006)

One mosque we aim to recreate is the Bab al-Mardum Mosque in Toledo, which was described by a researcher as follows:

‘The city of Toledo preserves an important Islamic monument, the mosque known as the Bab al-Mardum Mosque, which was built by Ahmad ibn Hadidi with his private funds. It was completed by Musa ibn Ali al-Banna' and Sada'a in the month of Moharram in the year 390 AH (December 999 – January 1000 CE).

The mosque is modest in size, constructed from granite stone and brick. The prayer hall is square, each side measuring eight meters. It features three longitudinal aisles intersected by three transverse aisles, creating a layout of nine columns, with four Gothic-style columns interspersed.

Twelve horseshoe-shaped arches are formed by these columns. Above each of the nine columns, there is a dome where the arches intersect, resembling the design seen in the Great Mosque of Cordoba, with the central dome being taller than the others. The mosque's main façade, which faces the Bab al-Mardum gate, has three arches, with a Kufi inscription above them made of raised brickwork within a frieze.

The inscription marks the date of construction. The right arch of these three is an extended horseshoe arch, akin to the arches in the Great Mosque of Cordoba, while the left arch is faceted. The middle arch has been renewed. Above these three arches, which serve as doors, is a row of intersecting horseshoe arches, crowned by a frieze with a perforated network design. The façade that faces the mosque's courtyard has three

extended arches as doors, above which are six blind intersecting arches in alternating white and red colors, a result of the alternating use of stone and brick in the style of Cordoba's arches.' (Salem 1985, 168-169)

Figure 21: Model of the Toledo Mosque via Leonardo.ai

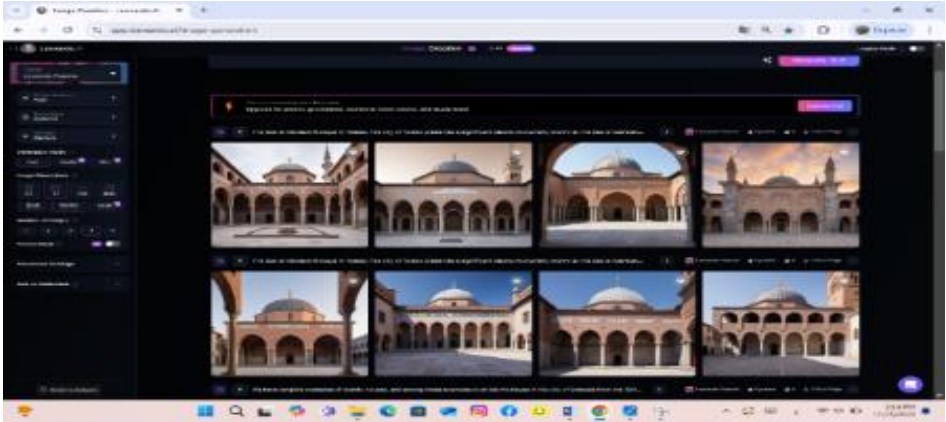


Figure 22: Model of the Toledo Mosque via Haiper.ai

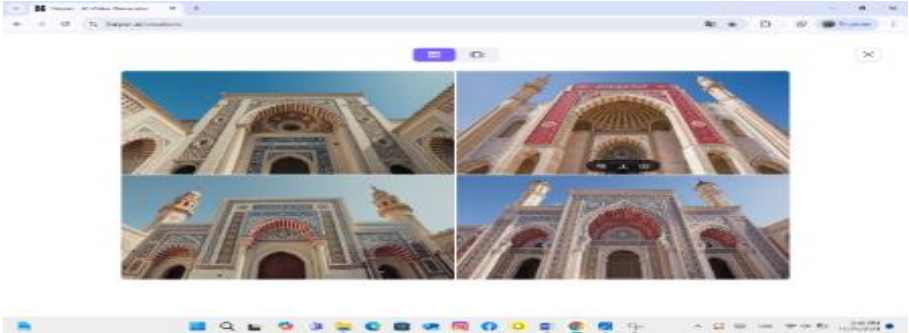


Figure 23: Model of the Toledo Mosque via Microsoft Bing

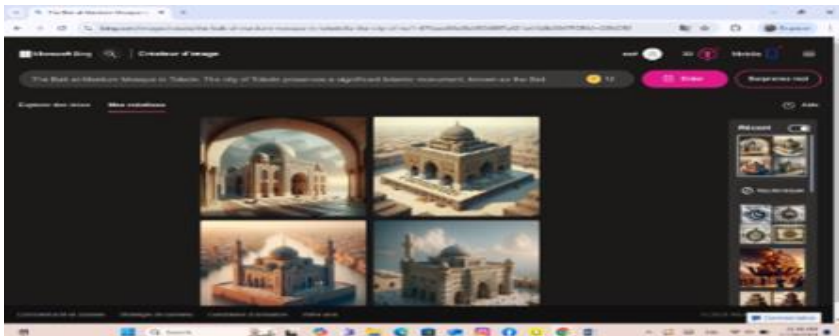
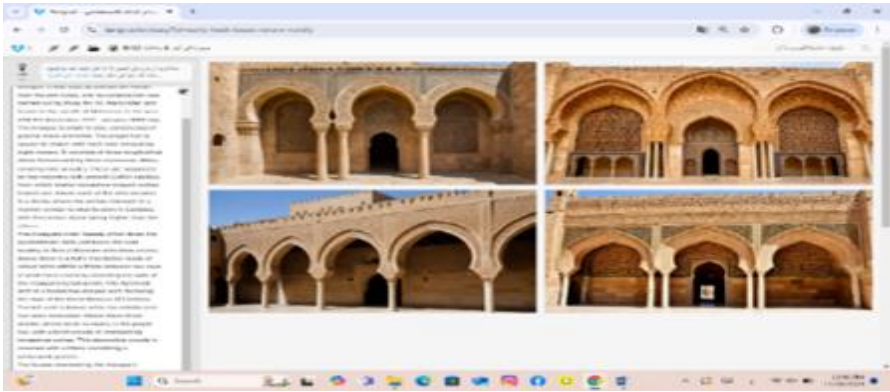


Figure 24: Model of the Toledo Mosque via Tenger.ai



5.1.5 The Hospital:

We also looked at the hospital constructed by the Almohad Caliph Al-Mansur in Marrakech, which was an extraordinary building, as described by a historian from Marrakech: ‘Al-Mansur built in Marrakech a Bimaristan (hospital) like no other in the world. He selected a vast plot in the most central area of the city and instructed the builders to construct it to the highest standards.

The builders excelled in intricate carvings and exquisite decorations that surpassed all expectations. He also ordered the planting of a variety of fragrant and edible plants, ensuring an abundance of water flowing throughout the complex, with more than four ponds in the center, one of which was made of white marble. Additionally, he ordered the finest furnishings, including materials such as mother-of-pearl, linen, silk, and leather, which exceeded all description. He allocated thirty dinars for medicine and appointed expert pharmacists specializing in antiriyah (medicines for the mind), ophthalmology, and potions.’ (ibn Ali al-Marrakushi 2006, 209)

Figure 25: Model of the Marrakech Hospital via Leonardo.ai

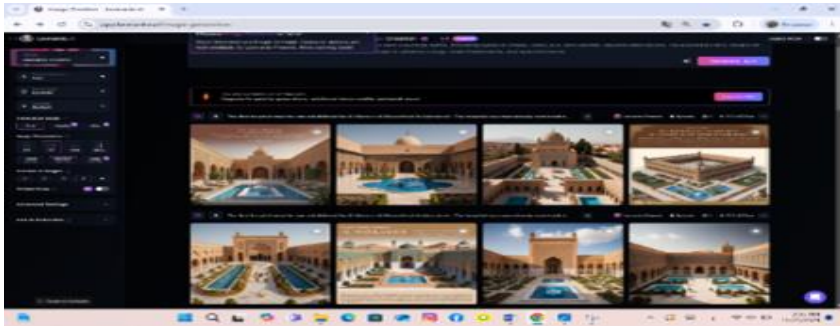


Figure 26: Model of the Marrakech Hospital via Haiper.ai

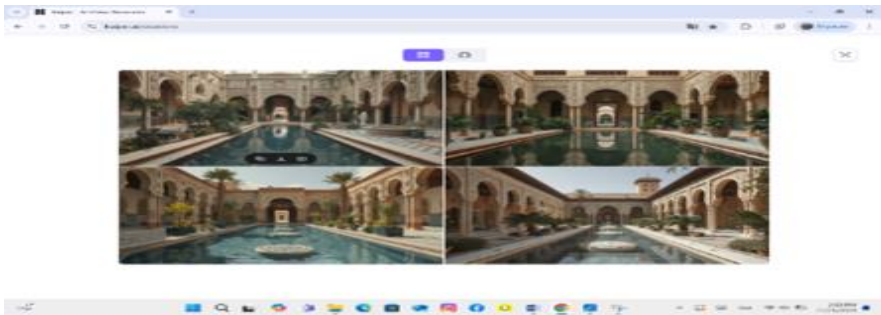


Figure 27: Model of the Marrakech Hospital via Microsoft Bing

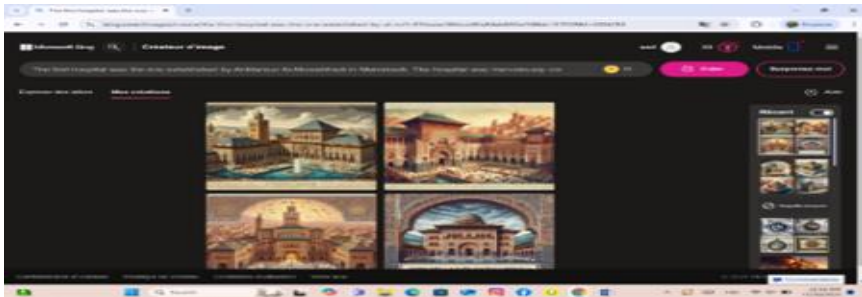
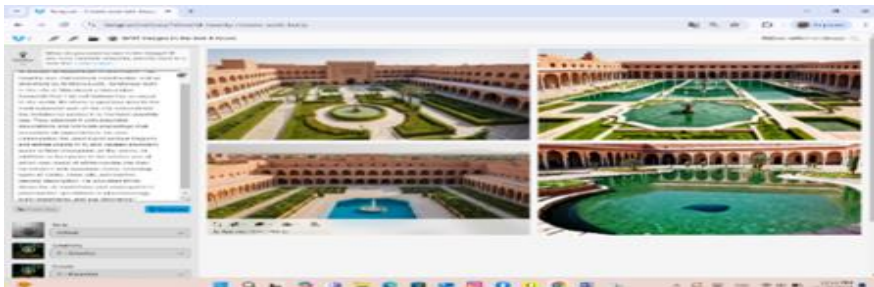


Figure 28: Model of the Marrakech Hospital via Tengr.ai



5.2. The Battles:

The Islamic West was characterized by frequent warfare. The region's frequent conflicts stemmed from the militaristic nature of its successive rulers, who were often at war with external powers and internal insurgents. As a result, the leaders of the Islamic West became renowned for commanding numerous battles, notably the battles of al Zalaca, al Ark, and al Uqab, among others. (Boularras 2018)

Among the battles that we will try to visualize with artificial intelligence programs, is one of the battles of the Granadians in their wars against Castile, described by Mohammad ibn Qasim al-Nuwairi, a historian of Andalusian-Malagian origin, in his book *Al-Ilmam bil-'Alam fi ma Jarat Bihi al-Ahkam*. He writes: 'The spies of King al-'Abid, ruler of Granada, came and informed him that the King of Seville, Al-Fanj, had arrived with his army at a place not far from them.

Upon hearing this, King al-'Abid ordered his army to prepare for battle. As night fell, he instructed his army commander, 'Order all soldiers to load firewood onto their camels.' The order was announced, and soon every camel carried firewood, thousands of camels were carrying it. The army then set out with these camels leading the way. When they were about a mile from the enemy's camp, the Sultan ordered that fires be lit in the firewood carried by the camels. Sparks were struck from flint, the fire spread, and the camels charged forward.

The fire raged, and the Christian cavalry, startled, broke loose from their reins. They panicked and began to flee, trampling over their own soldiers, who were knocked down and crushed by the flames. The fire consumed the camels, the enemy soldiers, and all their equipment and tents. The entire camp of Al-Fanj was burned, and those who survived tried to escape to the wilderness. Some fled on their horses, while others were killed by the Muslims. The Muslims gathered the fleeing horses and camels.' (Al-Abadi 2000)

Figure 29: Battle Image via Tenger.ai



Figure 30: Battle Image via Haiper.ai



Figure 31: Battle Image via Microsoft Bing

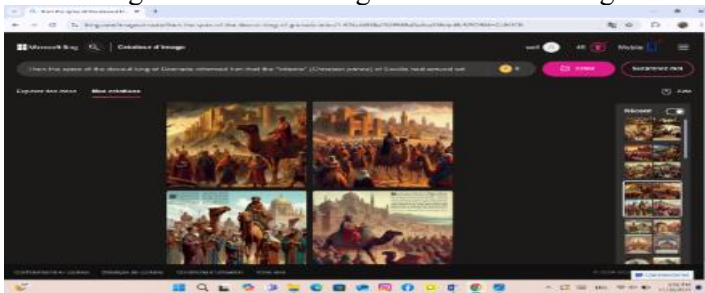


Figure 32: Model video of the battle via hailuoai.video



The Battle of Sagradas/Zalaca (478 AH), led by the Almoravid commander Yusuf ibn Tashfin, provides another compelling example. (Al Marrakchi s.d.) Following the methodology employed in describing Tihert, this battle will be analyzed in stages: first, the arrival of Yusuf ibn Tashfin and his forces in Andalusia and their subsequent meetings with Andalusian leaders; second, their strategic deployment in the Zalaca area; and finally, a reconstruction of the battle itself.

5.2.1 The Entry of Yusuf ibn Tashfin and His Armies into Andalusia:

He mobilized all his troops and sent them across the land to join his army, then proceeded to Ceuta, He began transporting his troops across until his entire army had crossed. There, Yusuf ibn Tashfin ordered the camels to cross, and so many of them passed that the island became crowded, their cries rising to the sky. The island's inhabitants had never seen a camel before, nor had their horses, which bolted in fear at the sight and sound of the animals. Yusuf followed in their wake and seized control of the island. When Ibn Abbad learned of his crossing, he sent his son to meet Yusuf and instructed the local officials to provide provisions and hospitality. Yusuf was pleased by what he saw, which lifted his spirits, and soon, armies with their commanders converged on Seville. (Author s.d.) (Al-Nasiri 1997)

Figure 33: Image of Yusuf ibn Tashfin and his army entering Andalusia via leonardo.ai

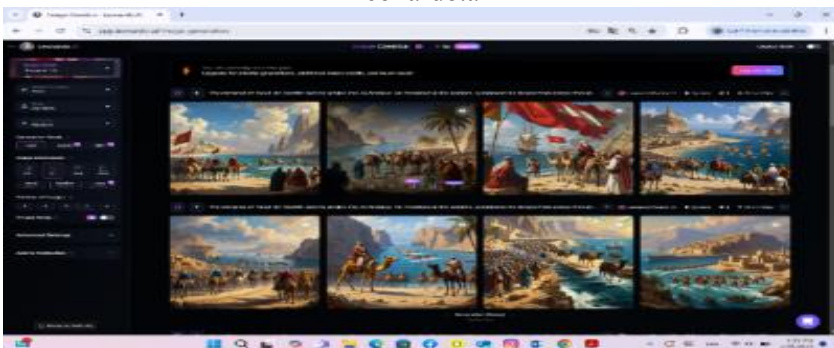


Figure 34: Image of Yusuf ibn Tashfin and his army entering Andalusia via tengr.ai



Figure 35: Video of Yusuf bin Tashfin and his army entering Andalusia via hailuoai.video



5.2.2 The Deployment of Muslim and Christian Armies at the Battlefield of Al Zalaca:

Prince Yusuf ibn Tashfin and his forces encamped at a site known as Al Zalaca, located in the outskirts of Badajoz in Al-Andalus. Meanwhile the opposing forces, led by al-Mu'tamid and other Andalusian rulers, encamped on the other side, with a hill between the two armies, creating a natural barrier and a psychological advantage. Separating the two armies was the Badajoz River, which provided water to both sides and acted as a natural boundary.

The Muslim army numbered approximately fifty thousand cavalymen, including twenty-four thousand Andalusian horsemen clad in armor and mail, along with an equal or greater number of Murabitun and Maghrebi warriors. The armies remained stationed for three days, during which envoys were exchanged between the two sides until an agreement was reached to engage in battle on Monday, 479 AH / 1086 CE. (Zar 1972) (Author s.d., 56)

Figure 36: The Muslim and Christian armies landing at Zalaca via leonardo.ai

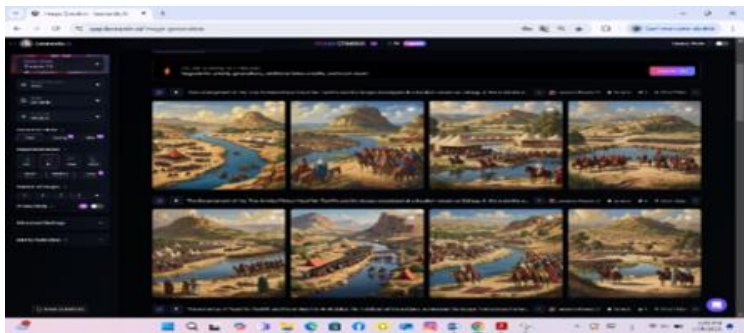


Figure 37: The Muslim and Christian armies landing at Zalaca via tengr.ai

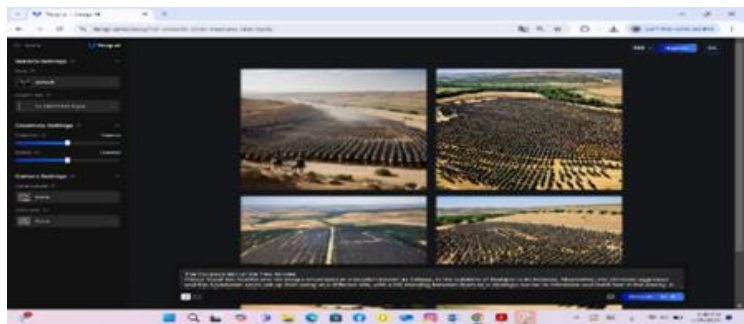
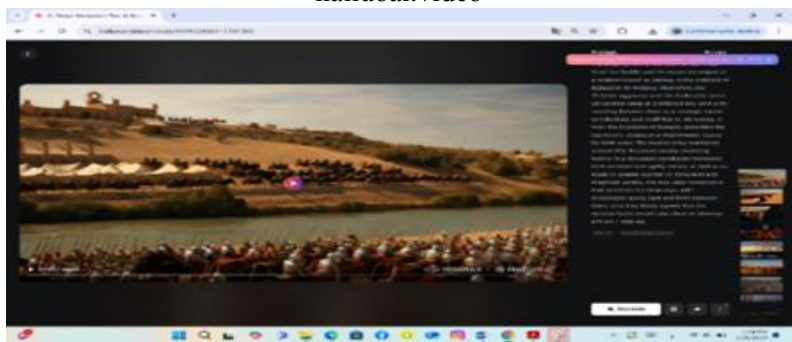


Figure 38: Video of The Muslim and Christian armies landing at Zalaca via hailuoai.video



5.2.3 The Battle of Al Zalaca:

Both sides prepared for battle, with religious leaders encouraging their forces: among the Muslims, imams and scholars exhorted steadfastness, while monks and clergy rallied the Christians to fight. (Shawqi 1980) The two armies met at Al Zalaca, southwest of Badajoz. (Al Marrakchi s.d., 33) Yusuf ibn Tashfin encamped less than a farsakh from Alfonso VI's forces. The battle was originally scheduled for Saturday, but Alfonso VI, breaking the truce, launched a surprise attack at dawn on Friday. The vanguard of Ibn 'Abbad, followed by the Christian forces, advanced while the Muslim camp was still at ease. In response, Ibn 'Abbad hastily mounted his horse, and news of the assault spread quickly through the camp, causing confusion and panic. The unprepared Muslim forces were thrown into disarray, and their cavalry was overwhelmed. Ibn 'Abbad was wounded and unhorsed, leading the Andalusian commanders to mistakenly flee, thus leaving their positions exposed. Alfonso VI, believing Yusuf ibn Tashfin had been defeated, also assumed the victory. However, Yusuf ibn Tashfin was waiting for the right moment. After a brief pause, he advanced with his elite cavalry and Sanhaja warriors, accompanied by tribal leaders. They stormed the Christian position, killing its defenders, and the sound of drums and bugles filled the air. Upon learning of Yusuf's presence, the Christians withdrew toward their own lines. Yusuf feigned retreat, allowing the enemy to believe they had gained ground, before launching a counterattack, pushing the Christians back. This maneuver was repeated several times. Finally, Yusuf ibn Tashfin ordered his Sudanese guard, some four thousand strong, to dismount and enter the fray. Equipped with Lamt lances, Indian swords, and Zan spears, they engaged the Christian cavalry in close combat, breaking their ranks and causing them to scatter in fear. Alfonso VI, his own forces depleted, attempted to strike Yusuf with his sword, but a Sudanese soldier seized his reins and thrust a dagger into his thigh, piercing his armor and saddle girth. By midday on Friday, the Muslims had secured a decisive victory. Alfonso VI and his army were routed, fleeing under a barrage of spears and swords, until they took refuge on a hill. As darkness descended, they quietly escaped. (Al-Nasiri 1997, 47)

Figure 39: Image depicting a brief description of the Battle of Zalaka via leonardo.ai

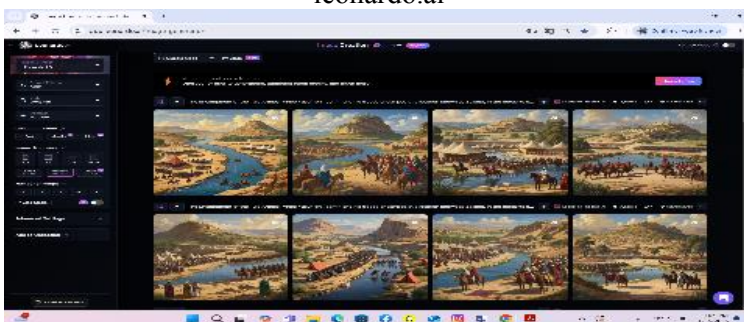


Figure 40: Image depicting a brief description of the Battle of Zalaka via tengri.ai

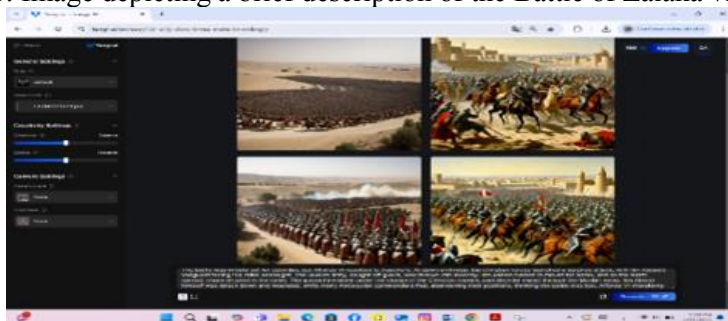


Figure 41: Video depicting a brief description of the Battle of Zalaka via hailuoai.video



6. Observations on the Role of Artificial Intelligence in Recreating Historical Events:

Based on the foregoing, we have recorded the following observations:

1. Through AI programs, we can reconstruct historical events in the form of images and videos by relying on historical description and narration.
2. Artificial intelligence assists historians in reshaping the past in a visual manner, thereby enhancing the understanding of historical events.
3. By utilizing images and videos, AI makes historical narration more engaging by breathing life into cities and events. For example, an image can depict a scene more clearly than reading about the events and relying on imagination, thus facilitating faster comprehension.
4. The use of video in recreating a historical event allows us to experience the incident in a more realistic way, enabling a more impactful visualization than reading alone.
5. AI enables a realistic representation of historical cities and military battles; however, we noted that the recreation of urban architecture was more realistic than that of military battles, perhaps because the historical description of urban architecture is simpler compared to that of battles.
6. The AI-generated videos of historical events tend to focus more on the initial phase of the incident, whereas images emphasize the final moment of the historical narrative. For instance, in the image depicting the preparation of the land for the construction of Tihert, the video portrays the event of predatory animals departing, while one AI program captured a phase involving the use of pigs. This led us to conclude that the more we segment the historical incident, the clearer the scene becomes, whether in images or videos.
7. The results obtained are relative but encouraging. When we inquired with the ChatGPT program about the accuracy of the recreations produced by AI programs, its response was as follows: AI programs can deliver very accurate results in converting texts into images (80–90%), whereas the generation of videos remains less accurate (60–80%). This depends on technological advancements and the continuous training of these models, which indicates that AI programs currently offer an acceptable degree of realism in historical recreation.

7. Challenges We Faced:

1. AI programs allow us to convert text into images. However, we found that when the historical era is not clearly specified, the AI often interprets the scene as belonging to a modern era.
2. A significant limitation of AI programs is their inherent inconsistency — entering the same text multiple times can produce similar or entirely different images. While the text remains unchanged, the images vary, even if slightly, preventing 100% accuracy.
3. Moreover, some AI programs impose strict word limits on text generation. For instance, Gencraft.com restricts input to a maximum of 1,000 words.
4. Some historical texts have not been accurately represented by AI programs. For instance, in the Leonardo platform, the depiction of the Battle of Zalaca illustrated the scene in a state of preparation rather than capturing the actual conflict.
5. AI programs do not process all historical texts, as certain content may be flagged as a violation of their guidelines. This was evident in the case of the first battle described in the article, where the Leonardo program rejected the input on the grounds that it constituted inappropriate content.
6. Furthermore, not all AI programs are freely accessible. Even those that offer free usage typically impose time restrictions, after which access becomes limited.
7. Although some AI programs demonstrate a high degree of accuracy, there remains the possibility that the output may not fully align with historical reality. In some instances, certain details were inaccurately represented, leading to a partial loss of authenticity.

8. Conclusion:

This study demonstrates that, in light of current technological advancements, particularly with the advent of artificial intelligence, historical researchers are presented with new opportunities in historical inquiry. The use of AI programs has become a powerful tool, enabling the transformation of historical events into high-quality, realistic visual content, making historical narratives more engaging through images and videos, and enhancing our understanding of history. Although the results remain relative, we anticipate that with the continuous technological advancements and qualitative leaps our world is witnessing, collaboration between history researchers and AI researchers will enable the rediscovery of the past in innovative ways, leading to a more accurate and insightful understanding and analysis of history.

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