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Reimagining Mughal Aesthetics: Preserving Cultural Heritage and Narrative Transformation of Akbarnama Miniatures through AI-Generated Manuscripts

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Abstract

This research explores the intersection of traditional visual heritage and emerging digital technologies by analyzing Mughal miniature paintings from the *Akbarnama*, particularly hunting scenes from Akbar's reign, and comparing them with AI-generated illustrations. Employing purposive sampling, selected folios were regenerated through prompt-based and image-to-image techniques using platforms such as Leonardo and Get Image AI. A comparative visual analysis, supported by interpretive and anthropological discourse, was applied to evaluate compositional accuracy, aesthetic fidelity, and cultural narratives and symbolism. The research draws on the theoretical lens of visual culture and art agency, particularly Alfred Gell's concept of art as a

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social agent and Appadurai's notion of cultural reproduction in the digital age. This framework enables a critical inquiry into how algorithmic systems represent, distort, or reimagine embedded historical narratives and aesthetic conventions. Mughal miniatures, known for their intricate patterns and vivid colors, embody a distinct mode of artistic expression that transcends conventional lens-based perspectives. This study situates AI-generated illustrations within the broader discourse of cultural heritage preservation, questioning whether algorithmic creativity can authentically capture the historical and socio-cultural narratives embedded in these traditional Mughal miniature manuscripts. By assessing the impact of AI on artistic representation, the research highlights its implications for cultural continuity, adaptation, and the evolving nature of heritage aesthetics in the age of digital replication.

Keywords: *Mughal Miniature paintings, Akbarnama, cultural heritage preservation and technology, digital humanities, AI-generated art*

Introduction

The study of visual culture plays an essential role in understanding how societies communicate values, construct collective identities, and navigate political power through material forms. Throughout history, images have been powerful agents in encoding social narratives, projecting ideologies, and establishing connections between the past and present. Miniature paintings, especially those of the Mughal period, serve as prime examples of this dynamic relationship between art and culture. These miniature paintings, deeply intertwined with social rituals, imperial patronage, and artistic innovation, are not merely aesthetic objects but are cultural narratives frozen in time. As such, they carry within them a wealth of information about political systems, cultural exchange, religious discourse, and the materiality of power. The Mughal miniatures, particularly those that illustrate *Akbarnama*, offer an exceptional lens through which to explore these intersections.

Mughal miniature paintings represent a unique blend of Persian, Indian, and Central Asian artistic traditions, flourishing under the patronage of Mughal emperors from the 16th to 19th centuries. Among the most celebrated works from this period is *Akbarnama*, a historical manuscript commissioned by Emperor Akbar[7] and illustrated by master artists of his court, depicting various aspects of his reign, including hunting scenes that reflect imperial and courtly aesthetics. These paintings are characterized by intricate detail, vibrant colors, and meticulous technique, serving as significant cultural artifacts that encapsulate historical narratives and socio-political ideologies of the Mughal era. Mughal miniatures offer rich insights into the visual culture, patronage practices, and embodied aesthetics of the imperial court. They act as visual

[7] There is a great Muslim dynasty that ruled over the subcontinent from the 16th century to the mid-18th centuries. After that time, it continued to exist as an increasing establishment until the mid-19th century. Akbar started his ruling journey at a very young age under the guidance of Regent Bayram Khan, and soon, he became an emperor with a great set of principles that were very important to him. He was the first great contributor to Mughal art (Klaasmeyer, 2017).

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texts that both reflect and shape cultural meanings and reinforce political authority, social hierarchy, and collective memory (Klaasmeyer, 2017).

Surya Tubach discusses the crucial elements of the Mughal miniature, which were drawn from India, Persia, and Europe to develop a new artistic style. Typically used to adorn manuscripts and art books, Mughal miniatures are a combination of rich, vivid colors, fine, delicate lines, and highly detailed paintings. Some lines have been painted with brushes made of a single hair, and despite their small size, they are remarkably accurate. These miniatures, which are frozen in postures that accentuate their two-dimensionality, have realistic perspectives and highly accurate shading. Mughal miniatures have sparked a lot of attention among art connoisseurs worldwide (Tubach, 2018).

The article "Mughal Dynasty" with illustrations through which Mughal artisans depicted Akbar defeating Hemu at the warfare of Panipat, which ordered the direction to Delhi, and by that means became the stream in Hindustan to the Mughals' favor. Akbar governed from 1556–1605, beneath the counsel of the viceroy Bayram Khan. Akbar set up a kingdom throughout India. At his loss of life in 1605, the kingdom enlarged from Afghanistan to Bengal. The political, administrative, and navy structures that he created had been the leading aspect behind its persevered endurance for some other century. The establishment of the intensely impartial Hindu-Rajput's occupying the uneven steep location happened through a system of reconciliation and defeat (Mughal dynasty, n.d.).

Being the first Mughal emperor to show a strong interest in the promotion of painting, Akbar introduced traditional miniature painting techniques in the Mughal court, following the Mongol and Timurid models. The most well-known illustrated books are Din-i-Ilaht, Aini-Akbari, Akbar Nama, Darab Nama, and Hamza Nama.

Akbarnama is an original and cultural manuscript, which has been translated by the court historian Abul Fazl in Akbar's order. Akbarnama contains three volumes: the first is concerning Akbar's forefathers, covering Akbar's birth and childhood; the second is about Akbar's reign; and the third, Ain e Akbari. Abul Fazl wrote it between 1589 and 1596, that points to numerous regions of the Indian subcontinent, some of which are currently a part of Pakistan (Eaton, 2022).

This manuscript is written in Persian, the Mughals' native tongue, and was compiled in the final years of Akbar's rule, which provides a vivid and in-depth account of the life and times of the renowned Mughal Emperor, Akbar. It contains in-depth information about the great Mughals' grandeur, their traditions, the social and economic circumstances of the populace, the civil and military institutions of the empire, the predicaments of their forebears, and their literature, art, and intelligence. Akbar showed a deep interest in the promotion of painting. Akbar divided his empire into provinces and districts, giving neighborhood governors salaries instead of land offers. In this manner, if the officers were dependent on the central government for income, they would likely not engage in insurrection. Later, whilst Akbar's son and grandson dominated, they accelerated taxes to assist army campaigns. The gadget of the presidency turned into very

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powerful in conserving its energy(Ballhatchet, 2018). In Akbarnama, Mughal artisans developed a new hyper-realistic miniature painting style in addition to prior painting techniques, which focused stylization of the subject rather than its realistic approach. This artistic transformation created iconic manuscripts, such as the Akbarnama (Akbarnama, 2022). The artists employed by Akbar's court came from both Iran and within India. In essence, Mughal manuscripts were the reflection of the smallest details, the bravery of expression, the accuracy of shape and color, and general completion. The author goes on to discuss the styles and techniques that were to develop a fresh approach to painting during Akbar's reign. The main purpose was to introduce the techniques of thick and deep shading, illuminated manuscripts, influence color contrasts, lining oils, and item decoration. The brush stroke was such an exquisite and labor-intensive detail that much could not be seen with the naked eye, and the viewer is always astounded to realize how an unbelievably simple brush stroke could produce such a wonderful result. Under his authority, the tradition of miniature painting flourished (Manuja, 2022).

Akbarnama contains miniatures and texts between 1592 and 1594, representing the Mughal paintings by 49 skilled artists from Akbar's imperial workshop, including Basawan, whose depiction in its illustrations became a revolution in Indian artwork. Luminously colored artwork from the Akbarnama (Book of Akbar), a run riot elephant striking a bridge at the river Jumna, in front of the Agra fortress, etc.(Klaasmeyer, 2017).

History is being preserved through creative arts, as showcased in the following projects: some research-based and others practical projects that illustrate their ideas around the themes and styles of Akbarnama. For example, Klaasmeyer outlines the traits and qualities of their paintings and acknowledges the sophistication of the work, claiming that the illustrations convey the whole story of the scenes. Expressions of excitement, concern, and surprise as the events played out in front of his eyes are shown in amazing detail in these little, brilliantly colored paintings by Akbarnama. These pictures symbolically and literally encapsulate the extraordinary accomplishments of this extraordinary individual as they are mentioned in the Akbarnama. Intense intelligence, excessive curiosity, and enthusiastic creative support are also reflected in innovations in artistic styles of work. Further, he used the vertical design to elegantly and tastefully illustrate the material. The figures in the artwork are fully integrated into an extremely detailed scenario. Viewers are fascinated by how the artist was able to realistically alter the balance, composition, contrast, proportion, variation, and movement of the scene (Klaasmeyer, 2022).

Similarly, students in Hussein Keshani's Digital Art History course created a project featuring digital multimedia on the subject of V&A Akbarnama. Instead of videos, this project consists of quick web animations with soundtracks. They took pictures from individual pages of the manuscript, zooming in or out to narrate them. They produced multimedia web animations, on significant occasions during the reign of the Mughal emperor Akbar, as well as the court and empire. Through oral, written, and visual media, they sought to educate the general public about valuable cultural heritage **(**Hussein, 2018).

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Parvati Sharma shares her creative journey through which she constructs a narrative of Akbar's life and reign in her writing, weaving together the elements of his historiography into a richly argued account. She noticed an uncanny immediate connection between his concerns and the issues of the day. After conducting in-depth research on Mughal paintings, she encountered the art of Akbar's era, and despite not being an artist herself, described the Akbarnama illustrations as perfectly rendered, claiming that the artists were "insaan -i-kamil, the perfect man. She claimed that Akbar's outstanding support of the arts is his most important and enduring legacy and a large part of Akbar's "perfection" stems from the way he instills "peace for all," or "sulh-i kul," among his many subjects. Akbarnama is not only a chronicle of Akbar but also a manifesto or theoretical foundation of his rule (Sharma, 2022).

Historia Maxima is the team that brings appealing historical tales and tells them in captivating, animated ways. They presented an accurate and instructive biography of Akbar. Main characters from the story, like Akbar, Hamyun, or Hamida Bano, were taken from the Akbarnama manuscript and animated for this documentary, "Life of Akbar." They represented their culture and faith via images and video snippets of things, creatures, and locations. They cover everything in this film, from the time of his birth, when his father Humayun was escaping the lovely kingdom he had founded, to the time of his passing, when the Empire was at its height. Akbar was and continues to be a legend (Maxima, 2022).

In recent years, advancements in artificial intelligence (AI) have transformed the landscape of visual arts and cultural heritage preservation. AI-generated art, produced through deep learning algorithms, raises critical questions about creativity, authenticity, and the role of technology in reinterpreting historical artworks. The integration of artificial intelligence (AI) into various domains has transformed contemporary practices and reshaped historical narratives and methodologies. In the realm of historical research and illustration, AI technologies, particularly Large Language Models (LLMs), offer opportunities for validating historical facts and filling knowledge gaps. This capability is crucial in an era characterized by an overwhelming volume of digital information, which increases the risk of misinterpretation and inaccuracies in historical accounts (Tasar, 2023). The evolution of AI in art showcases its ability to analyze and reinterpret historical artistic practices, leading to innovative creations that blend traditional styles with contemporary techniques (Chi, 2024; Liu, 2020).

Moreover, AI's role in digitizing and analyzing historical documents has significant implications for cultural heritage preservation. Techniques such as Named Entity Recognition (NER) and unsupervised event detection are employed to enhance the accessibility and understanding of historical texts, which are often plagued by digitization errors (Boroş et al., 2020; Boroş et al., 2022). This technological intervention aids historians in their research and democratizes access to historical knowledge, allowing a broader audience to engage with the past (López-Nores et al., 2019).

In the context of ethical considerations, the rise of AI-generated art and its implications for cultural narratives cannot be overlooked. The ethical challenges posed by AI in creative fields,

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such as issues of authorship and authenticity, reflect broader societal concerns about the impact of technology on human creativity and expression (Srinivasan, 2021; Giovanola, 2024). As AI continues to evolve, it is imperative to consider these ethical dimensions alongside its historical applications to ensure that the benefits of AI are equitably distributed and that historical-cultural narratives are accurately represented.

In the backdrop of this discussion, this study aims to explore how AI transforms the historical visual narrative of Akbar's reign by examining its potential to revive Mughal miniature manuscript art through digital means. Furthermore, the research will analyze the impacts of AI on the visual histography of Akbar's reign. The study will investigate the creative possibilities offered by AI tools while critically assessing the tensions between human creativity and AI-generated illustrations.

This research is grounded in the theoretical frameworks of visual culture and materiality, particularly drawing from Alfred Gell's theory of art as a form of social agency. Gell (1998) posits that art objects are not merely aesthetic representations but act as agents that mediate social relationships, convey meanings, and sustain cultural memory. Mughal miniature paintings, especially those in the *Akbarnama*, served as imperial tools of narration, visualizing power, ideology, and cosmology within the court culture of Akbar's reign. These artworks are embedded within a broader system of symbolic communication and craftsmanship that reflect the embodied knowledge and intentionality of their creators. In examining how AI interprets and reproduces such artwork, this study explores whether machine-generated images can replicate the same socio-cultural and aesthetic agency of their human-made counterparts.

Moreover, this research engages with theoretical debates on authenticity, authorship, and the reproduction of heritage in the digital age. Inspired by Arjun Appadurai's (1996) work on the production of locality and the circulation of cultural forms in globalized contexts, the study questions how the cultural meaning of Mughal art is transformed, or diluted, when recontextualized through algorithmic generation. By comparing original and AI-generated visual narratives, the research critically examines the shifting boundaries between tradition and technological modernity, human creativity and machine output, and material authenticity versus digital simulacra. This theoretical lens allows the study to interrogate not just the visual differences between the images, but the deeper implications of machine-mediated cultural production.

Methodology

This study adopts a qualitative research approach to investigate the capabilities and limitations of artificial intelligence (AI) in regenerating historical Mughal miniature art, particularly focusing on the manuscripts from the reign of Emperor Akbar (r. 1556-1605) as illustrated in the Akbarnama. This research is interpretive in nature and aims to examine the aesthetic, symbolic,

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and narrative fidelity of AI-generated images in comparison with original Mughal court illustrations.

The study employs a comparative visual analysis framework within a qualitative paradigm. Drawing from qualitative methods used in art historical and cultural analysis and digital humanities, the research integrates traditional interpretive analysis with contemporary digital tools. This approach enables a multi-layered exploration of visual representation, cultural symbolism, and artistic detail.

A purposive sampling technique was used to select visual manuscripts from the Akbarnama that prominently depict royal hunting scenes. These scenes were chosen due to their symbolic, aesthetic, and political significance in Mughal imperial Miniature. Hunting episodes such as the qamargah not only reflected Akbar's power and control over nature but also served as instruments of statecraft and military rehearsal, making them ideal subjects for visual and cultural analysis.

A total of seven original manuscript folios were selected, each representing different hunting episodes involving Emperor Akbar. These were sourced from publicly accessible digital archives of major museum collections, ensuring high-resolution and authenticated representations for comparison.

Two image-generation techniques, text-to-image prompting and image-to-image generation, were used to explore the possibilities of AI-assisted manuscript recreation. Text-to-image prompting is detailed textual prompts describing the content, composition,color scheme, and stylistic features of the original manuscript were input into a state-of-the-art AI image generation model (e.g., Get Image AI, Leonardo). These prompts were crafted with reference to the visual and thematic elements observed in the original painting. In image-to-image generation technique, original manuscript folios were used as visual references to generate new images. This method enabled the AI to "reinterpret" the artwork while preserving certain compositional elements.

The regenerated images were analyzed using comparative visual analysis techniques, focusing on several key variables such as, pictorial accuracy i.e. representation of key figures, animals, and actions within the narrative scene; aesthetic and technical detailing that caters fidelity in linework, shading, layering, color gradation, and miniature painting conventions; textual integration i.e. reproduction and legibility of Persian inscriptions typically overlaid in Mughal manuscript; and cultural symbolism that analyzed the presence or absence of specific cultural, imperial, and religious motifs significance to the original narrative. Visual comparisons were documented and annotated, highlighting both convergence and divergence between the AI-generated images and the original manuscripts.

Since this research involves digital reproduction and analysis of public domain art objects, there are no human subjects involved, and thus, no formal ethical clearance was required. However, all original manuscript sources are duly credited, and AI tools are critically evaluated rather than uncritically endorsed. The study is limited to a small number of visual manuscripts and focuses

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specifically on hunting scenes. Additionally, the AI image generators used may have inherent algorithmic biases or limitations in training data, which may affect their performance in reproducing non-western artistic traditions.

This methodological framework combines art historical rigor with digital experimentation, offering insights into how AI might be used (or misused) in the regeneration of culturally rich historical art forms. The findings not only shed light on the technical capabilities of generative AI but also raise important questions about authenticity, authorship, and cultural representation in the age of generative AI creativity.

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Discussion and Analysis:

This section presents a critical analysis of the visual, symbolic, and narrative distinctions between selected original *Akbarnama* miniatures and their AI-generated counterparts. By engaging with both material and digital forms of image-making, the discussion unpacks how algorithmically produced illustrations interpret, or fail to interpret, the embedded cultural codes, artistic sophistication, and historical intentionality of Mughal miniature paintings. The comparative approach employed in this research does not merely evaluate surface-level similarities or aesthetic appeal; rather, it delves into the deeper symbolic, compositional, and epistemological divergences that emerge when historical manuscripts are filtered through the lens of artificial intelligence.

As shown in Figure 1, an illustration, Mughal court artists Basawan and Tara the Elder depict Mughal emperor Akbar (r.1556–1605) slaying a tiger near Narwar, central India, in 1561, in the *Akbarnama* (Book of Akbar). The royal entourage disturbed a female tiger, who sprang out from the forest and lashed out to protect her five cubs. The emperor's companions were said to have frozen in terror, but the emperor reacted instantly, killing the tigress with one blow of his sword. His men then killed the five offspring. The event is depicted over two pages, the other page being Museum no. IS 2:18-1896. The image is overlaid by a Persian text panel. Painting, *Akbarnama*, Akbar tiger-hunting near Narwar, outline and portraits by Basawan, painting Tara the Elder, opaque watercolor and gold on paper, Mughal, ca. 1590-95.

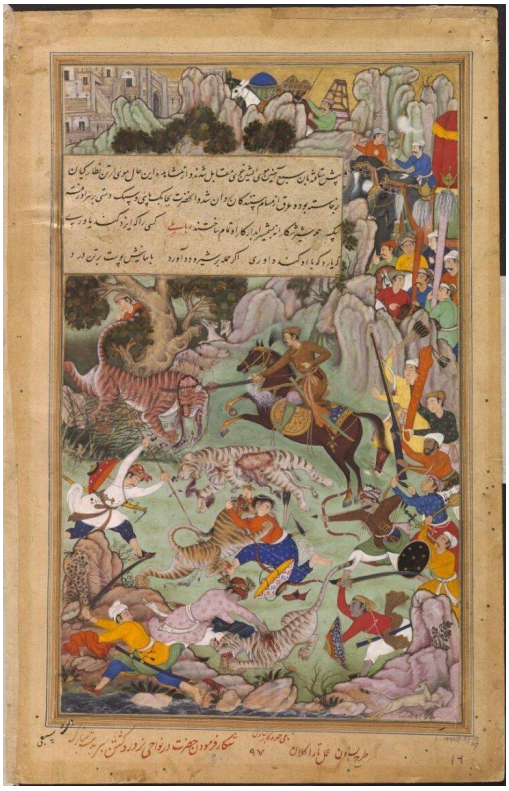

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Figure 1(a) Original Hunting scene from Akbar Nama (Victoria and Albert Museum, n.d.-a)

Figure 1(b) AI Generated from Get Image AI

As argued by many, recreating artwork through AI often strips it of its original meaning and depth. It is evident when comparing the original painting, which has been hunted by the Mughal army, to its AI-generated version. In the latter, the mountainous backdrop has been replaced with buildings and castles, altering the context entirely. The facial features in the AI version lack the intricate details of the original painting, and the decorative patterns on the horses appear plain rather than vibrant and ornate. At first glance, the AI image may resemble the original, but upon closer inspection, it fails to capture the complexity and richness of the original artwork. Furthermore, the Persian script in Figure A (the original) is clearly legible, whereas in Figure-B (the AI-generated image), the text is distorted and unreadable.

Figure 2 (a) represents the left half of a double-page composition from the *Akbarnama* (*Book of Akbar*) depicting an incident that took place in 1561 near Narwar, in central India, when the Mughal emperor Akbar (r.1556–1605) was hunting with companions. The accompanying right half of the composition (Museum no. IS.2:17-1896) portrays Akbar slaying a tiger who suddenly sprang out at the group. In the left panel, Akbar's companions are shown killing the cubs that the tigress was trying to protect. The image, painted by the Mughal court artists, Basawan and Sarwan, is overlaid by a panel of Persian text.

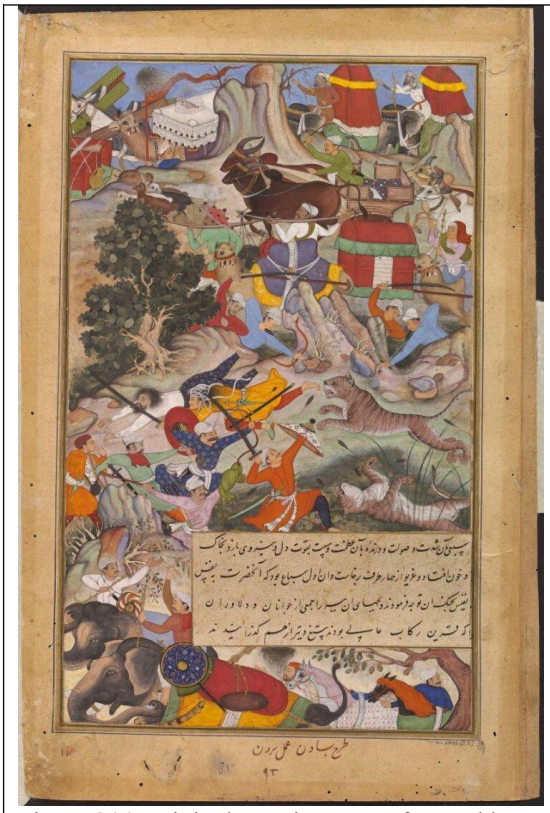

Figure 2(a) Original Hunting scene from Akbar Nama (Museum, n.d.-b)

Figure 2 (b) *AI Generated* from Get Image AI

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In contrast, the AI-generated version of this painting lacks several key elements of the original work. Notably, the detailed rendering of the tree trunk is missing, and the color of the foliage is flat and uniform in the AI-generated version of this painting. Traditional miniature paintings were built up in layers, creating a sense of depth and intricate detail, qualities that are missing in the AI version. Fine details of both human and animal figures are diminished; for instance, the eyes of the two elephants in the left corner are poorly defined, and their features appear flattened. Moreover, where horses are depicted in the original, the AI mistakenly generated distorted human forms. As previously mentioned, the Persian script in this figure is clearly legible in the original painting, but is unreadable in the AI-generated image, making it difficult for viewers to relate the text to the visual narrative.

Figure 3(a) Original Hunting scene from Akbar Nama (Museum, n.d.-c)

Figure 3(b) *AI Generated* from Get Image AI

Among the numerous courtly scenes depicted in the Akbarnama, one striking illustration captures Emperor Akbar on a hunting expedition at Palam, near Delhi. This image, part of a double-page spread (with the companion folio Is.271-1896), was created during a transformative period in Mughal military history, shortly after the emperor's decisive conquest of Chitor in 1568. The Rajput defenders of Chitor had resisted fiercely, prompting a brutal Mughal response.

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Akbar ordered the execution of tens of thousands, an act that, while extreme, became a defining message to potential advertisers. The severity of these reprisals discouraged prolonged resistance in later campaigns and helped establish Mughal dominance across northern India.

Following this bloody episode, Akbar did not immediately advance to his next military objective, Ranthambhor. Instead, he stopped at Delhi, where he undertook a religious pilgrimage and orchestrated a royal hunt in the nearby plains of Palam. While hunting might appear as a leisurely pursuit, it held deep political and administrative significance in Akbar's reign. It was a tactical tool, often used to assess the loyalty and readiness of his troops, to enforce imperial visibility across distant regions, and to subtly intimidate restive provinces by the sudden arrival of armed entourages under the guise of sport.

The *qamargah,* a Timurid-style hunt employed by Akbar on this occasion, was a grand and elaborate method in which beaters encircled wild animals over a vast area and gradually drove them toward a central killing ground. Reserved solely for the emperor and his selected countries, the *qamargah* functioned as both a demonstration of imperial power and a symbolic nod to Akbar's Central Asian lineage. Though only briefly referenced by Abu'l Fazl in the *Akbarnama*, the event served multiple functions: ritual, governance, surveillance, and militaristic rehearsal.

Visually, the folio is a collaborative work that reflects the sophistication of Mughal artistry. The initial design (*tarh*) was conceived by Mukund, a leading figure among Akbar's painters, while the coloring was completed by Narayan. The combined efforts illustrate not just an emperor in action, but the strategic choreography behind Mughal sovereignty.

In contrast to the refined artistry and layered symbolism of the original folio, the AI generated version, shown in figure 3B, demonstrates significant shortcomings in both form and fidelity, where the original painting vividly depicts a royal deer hunt, complete with recognizable animal figures and dynamic motion, the AI generated scene, replace them with deformed and undefinable creators, lacking and an art clarity or cultural specificity. This note only disturbs the narrative coherence but also undermines the representational function of the image.

The deficiencies extent beyond the central subject. In the upper left corner, architectural elements that should depict intricate Mogul style dwelling or rendered in accrued and in distinct manner, stripping the scene of its historical and environmental context. Human figures, two, suffer from a lack of expressive detail fashion features are flattened, and the nuanced depiction of hands, hair, and body posture-so essential to the emotive and narrative strength of Mogul miniature-is not noticeably absent.

The degradation in visual quality points to a fundamental limitation in AI-generated recreations: the inability to capture the artistic intentionality, cultural symbolism, and painterly techniques, such as layering, shedding and line precise precision, that defined the work of master artists like Mukund and Narayan. Where the original painting is imbued with imperial ideology and aesthetic purpose, the AI-generated version offers only a superficial approximation, devote of the craftsmanship and meaning that give historical artwork its enduring value.

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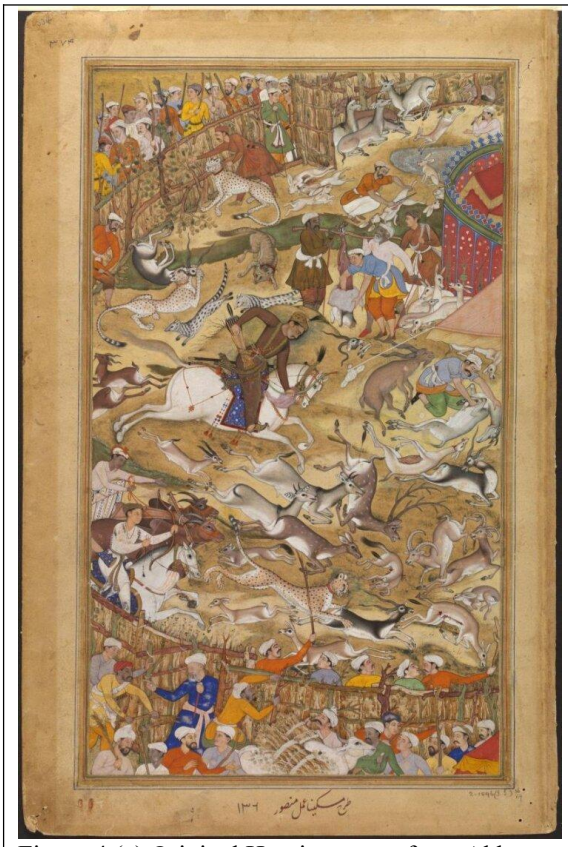

Figure 4 (a) Original Hunting scene from Akbar Nama (Museum, n.d.-d)

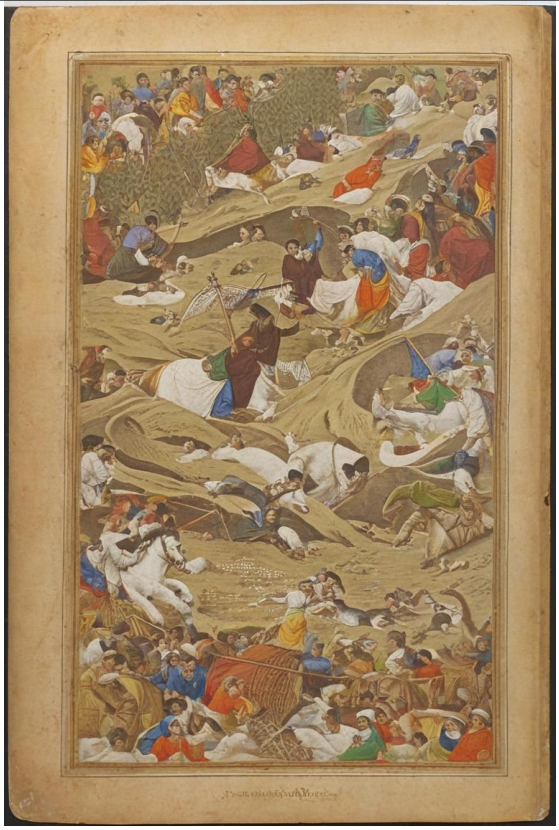

Figure 4 (b) *AI Generated* from Get Image AI

Among the most dynamic depictions in the Victoria and Albert Museum's collection of Akbarnama illustrations is a scene from a royal *qamargah*, a traditional Mughal hunt. This particular folio (left side of a double-page spread; the right half is IS.2:55-1896) captures the grandeur and precision of an imperial spectacle where wild game was systemically herded into a ten- mile- wide circular enclosure. Within this arena, Emperor Akbar and his companions could engage in controlled hunting from a central vantage.

Executed in the formative years of the celebrated Mughal painter Mansur, who would later emerge as a leading figure in naturalistic illustration painting, is a significant example of the confluence between art and environmental documentation during Akbar's reign. Divyabhanusinh, a naturalist, has observed that this artwork offers invaluable insight into the regional fauna of the Lahore area in the late 16th century. Distinct species such as the pir Panjal markhor (capra falconeri cashmiriensis) and the Punjab urial (ovis orientalis punjabiensis) are visible in the

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composition. These animals, while rare, were likely sourced from adjacent landscapes- markhor from the Murree hills and urial from the nearby salt range, where they are still present today.

In the foreground, there is a striking and detailed portrayal of a blackbuck being skinned, its body suspended while its severed head, featuring a uniquely malformed right horn with an unusual circular twist, rests nearby. The specificity of this anatomical deformity suggests close observation, indicating that the artist had direct access to such creatures. adding further dynamism to the scene are three cheetahs, each actively pursuing adult male blackbucks. Two of them, no longer hooded, are about to be unleashed by their handlers, a testament to the Mughals' mastery over trained hunting animals and the elaborate ritualism of the hunt. This visual narrative thus operates on multiple registers: as a political performance, a record of regional biodiversity, and an exemplar of Mughal artistic excellence.

In contrast to the original Akbarnama miniature, rich with nuanced details and narrative dynamics, the AI-generated recreation falls short in preserving both the aesthetic depth and symbolic complexity of the Mughal composition. One immediately notices the diminished quality of landscape elements in the AI version. For instance, a carefully rendered wooden fence in the upper left of the original is replaced by a flat, uniform expanse of green in the digital rendering. This substitution not only erases the environmental specificity of the scene but also disrupts the visual balance of the composition.

Moreover, the spatial coherence that defines the miniature, where every figure and animal is placed with deliberation, is compromised in the AI-generated image. human figures and animals appear awkwardly positioned, some seemingly floating atop sand or water, defying gravity and context. Horses appear partially submerged, their limbs disappearing into vague ground textures, further weakening the narrative clarity and the realism that Mansur's hand so masterfully achieved.

The original painting communicated movement, tension, and immediacy, especially evident in the animated postures of the deer, which evoke a sense of urgency and life. These animals are not simply decorative; they animate the scene with varied poses and gestures that reflect both chaos and natural behavior. In contrast, the AI-generated deep appear static or lifeless, their presence lacking the vitality and expressive diversity that made the miniature compelling. The image becomes less a scene of active pursuit and more a tableau of still forms.

The representation of the human figures also highlights the inadequacies of AI interpretation. Where the original showcases warriors adorned in historically accurate and intricately patterned Mughal attire, the AI substituted these with simplified, anachronistic clothing that appears flat and modern. The regal identity of Akbar's court is thus visually undermined, with symbolic markers of imperial authority, such as weapons, turbans, and banners, either omitted or inaccurately rendered. Even natural elements such as fences are replaced with random foliage, demonstrating a lack of contextual awareness in the generative process.

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Most critically, the affective and symbolic power of the original is diluted in the AI version. The original miniature, at a single glance, draws the viewer into a rich and layered narrative, rewarding close observation with detail after detail. By contrast, the AI image fails to sustain such engagement; it lacks the tactile intimacy, compositional intentionality, and cultural specificity that characterize Mughal miniature painting. This comparison underscores the limitations of machine-generated imagery in replicating historically and artistically dense visual cultures, where every element is changed with meaning beyond mere representation.

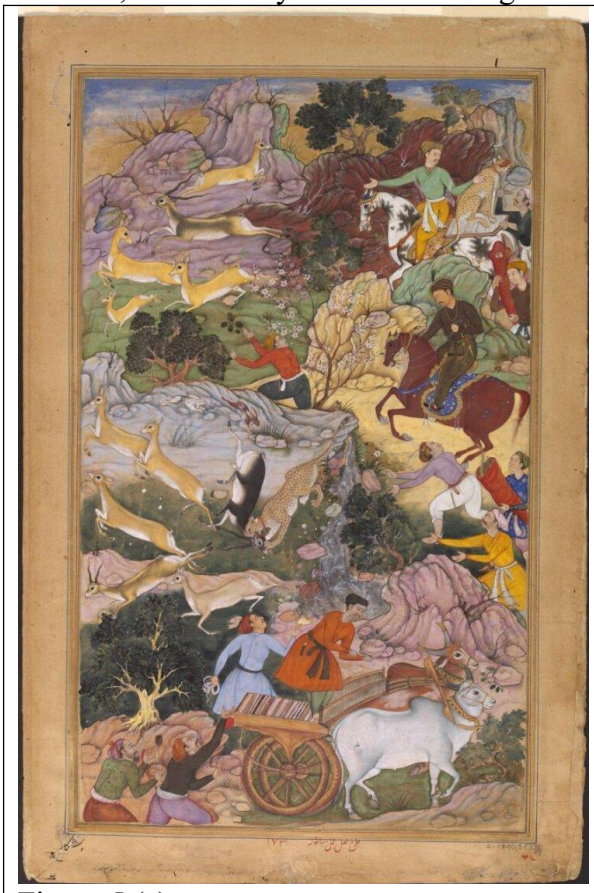

Figure 5 (a) Original Hunting scene from Akbar Nama (Museum, n.d.-e)

Figure 5 (b) *AI Generated* from Get Image AI

The painting, created by Mughal court artist La'l and Sanwala, portrays an event from 1572, where Emperor Akbar(r.1556-1605) participates in a black buck hunt using his trained cheetahs. This artwork is part of the Akbarnama (Book of Akbar), which was commissioned by Akbar in 1589 as the official record of his reign, with the illustrations likely completed between 1592 and 1595. In the scene, Akbar is depicted holding back the reins of his horse to ensure a swift pursuit during the hunt. In the foreground, a cheetah has been released from a bullock cart and is shown successfully bringing down a fully grown male black buck. Meanwhile, another cheetah, still blindfolded and restrained by its handler, is visible in the upper right of the composition. The

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painting also features eight female cheetahs, with two additional cheetahs, identified as "sub-adult males" by the naturalist Divyabhanusinh, marked by their lighter, less black fur.

A closer examination of the original Akbarnama miniature further reveals the meticulous attention to narrative detail, particularly in the depiction of animal figures. The scene contains no fewer than eleven deer, strategically arranged to convey a dynamic sense of motion, as if they are fleeing the advancing soldiers and cheetahs. Their varied poses, expressions, and interactions contribute to a layered visual storytelling that reinforces the urgency and vitality of the *qamargah*. In contrast, the AI-generated image (Figure 5b) depicts only two indistinct deer confined to the left side of the composition. These figures lack definition, with blurred contours and lifeless postures, reducing their visual and symbolic significance within the scene.

While the AI version attempts to mimic the eye movement and general compositional flow of the original (Figure 5a), it fails to replicate the narrative coherence embedded in the traditional painting. A particularly striking example is the tiger-deer interaction in the original: a dramatic moment in which a tiger's jaws are visibly clamped around a deer's head. This visceral scene is entirely absent in the AI version, replaced by a solitary figure in black robes, standing incongruously where a moment of predatory action once unfolded. Such substitutions flatten the narrative layers and disrupt the emotional resonance conveyed through the original animal-human interactions.

Further, the representation of other animals and figures in the AI image reveals significant compromises in anatomical realism and textural richness. The bull, for instance, appears more like a generic illustration than a living creature. It lacks the muscular form, posture, and tactile quality of its counterpart in the miniature. Similarly, the traditional patterned fabric draped over horses, an emblem of Mughal regality, is either missing or rendered with minimal care. Some horses appear incomplete, with missing heads or disjointed bodies, further diminishing the internal logic and coherence of the image.

The rendering of landscape elements continues this pattern of degradation. In the original, the mountainous backdrop is rendered with gradations of tone that create a palpable sense of depth and distance. In the AI image, however, these mountains are visually collapsed into flat, bush-like shapes, devoid of the nuanced middle tones that are essential to naturalistic shading. The result is a two-dimensional terrain lacking atmospheric perspective or spatial realism.

Even the human figures in Figure 5b, although more numerous and seemingly active than Figure 5a, are undermined by their lack of expressive detailing. Facial expressions are either absent or crudely formed, hair textures are omitted, and body postures are often anatomically awkward. The overall scene, while busy, lacks the refined choreography of movement that characterizes the traditional composition.

This comparison not only highlights the limitations of current AI tools in replicating the sophistication of Mughal miniature painting but also underscores the importance of cultural literacy, historical accuracy, and artistic intentionality, elements that remain beyond the reach of

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automated image generation. The original Akbarnama painting functions as a carefully constructed narrative tableau; its AI counterpart, by contrast, is a flattened imitation that sacrifices meaning for surface mimicry.

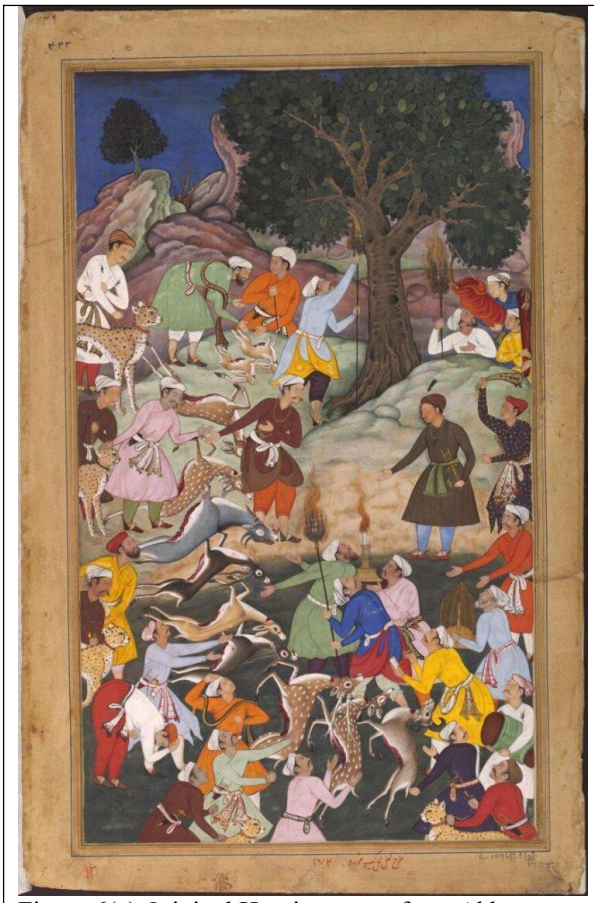

Figure 6(a) Original Hunting scene from Akbar Nama (Museum, n.d.-f)

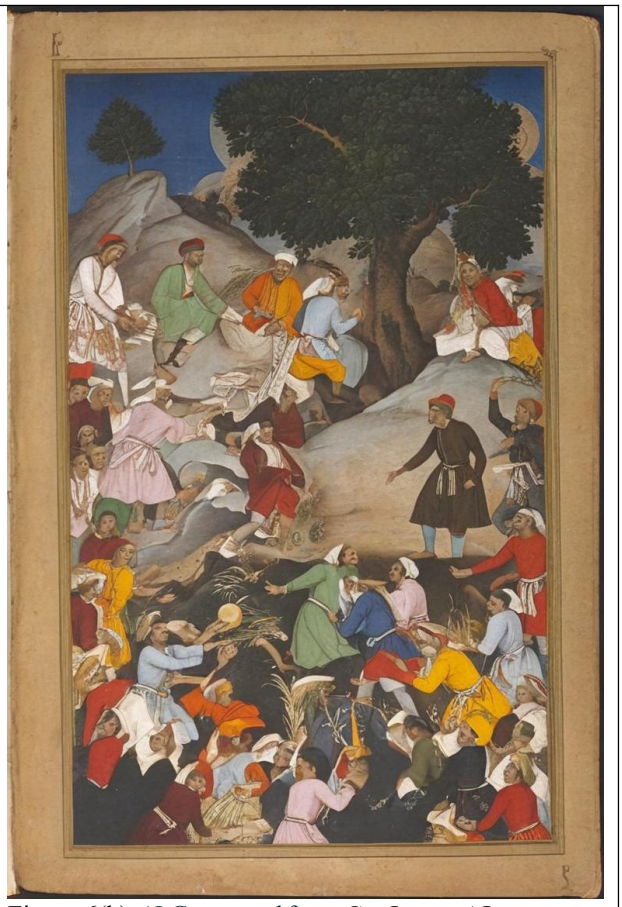

Figure 6(b) *AI Generated* from Get Image AI

One striking illustration from the Akbarnama (book of Akbar) depicts a nocturnal hunting scene where Emperor Akbar (r.1556-1605) is shown inspecting the animals captured during the hunt. The scene unfolds under the flickering illumination of torches, casting dramatic light and shadows that emphasize the emperor's central position and authority, highlighting his overseeing hunt and the trophies he has claimed. The glow not only serves a practical purpose in guiding the nighttime expedition but also symbolically underscores Akbar's omnipresence and vigilance, even under the veil of darkness.

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A comparative reading of figure 6(a) and the AI-generated version in Figure 6(b) further reveals the significant disparity in compositional integrity and visual depth between traditional miniature painting and machine-generated imagery. In the original Akbarnama illustration, Figure 6(a), one immediately notices the presence of eleven rendered on a variety of dynamic, inverted postures, indicative of a successful hunt and underscore the scene's narrative complexity. These animals are carefully integrated into the overall visual hierarchy, contributing to the composition's rhythm and depth. In contrast, the AI-generated illustration (Figure 6b) reduces this intricate arrangement to a flattened, almost abstract rendering. The deer, limited in number, only three can be discerned upon close inspection, are presented in muted grey tones, devoid of anatomical articulation or emotional expression.

Moreover, the symbolic and narrative elements that define the original artwork are either overlooked or misrepresented in the AI version. Notably, in Figure 6(a), a prominent figure holds a fire goblet, its flame illuminating the surroundings and clearly signaling the nocturnal setting of the scene. This torch not only functions as a light source but also serves as a narrative anchor that frames the hunting activity within a specific temporal and atmospheric context. The AI-generated version omits this detail entirely, stripping the scene of its temporal specificity and flattening the emotional resonance of the moment.

Similarly, the rendering of figures in the AI illustration lacks the humanistic qualities that characterize Mughal miniatures. Where faces are present, they are wither expressionless or stylistically vague, and in some cases, facial features are entirely absent. In certain areas, what should be human figures holding deer or hunting tools instead appear to be handling indeterminate objects, bushes or utensils, further confusing the narrative logic of the scene. This misrepresentation exemplifies the limitations of AI in reading and reproducing culturally encoded visual syntax.

Another striking difference lies in the treatment of botanical and environmental elements. The tree leaves and branches in Figure 6(a) are carefully shaded, with tonal gradation that convey volume and naturalism. By contrast, the AI image simplifies foliage into uniformly flat patches of green, eliminating the sense of depth and atmospheric layering that is central to the Mughal landscape painting. The absence of a discernible light source further exacerbates this flattening effect, as the AI-generated scene lacks the chiaroscuri necessary to evoke a nighttime ambiance.

At a cursory glance, the AI-generated illustration may appear to be a close reproduction, echoing the compositional structure and color palette of the original. However, a closer, more critical examination reveals the many gaps - technical, symbolic, and cultural - between the two. While AI tools can approximate form, they struggle to capture the intentionality, nuance, and historical meaning embedded in traditional miniature painting. This comparison ultimately underscores the irreplaceability value of human artistry and contextual knowledge in the creation and interpretation of such richly layered visual narratives.

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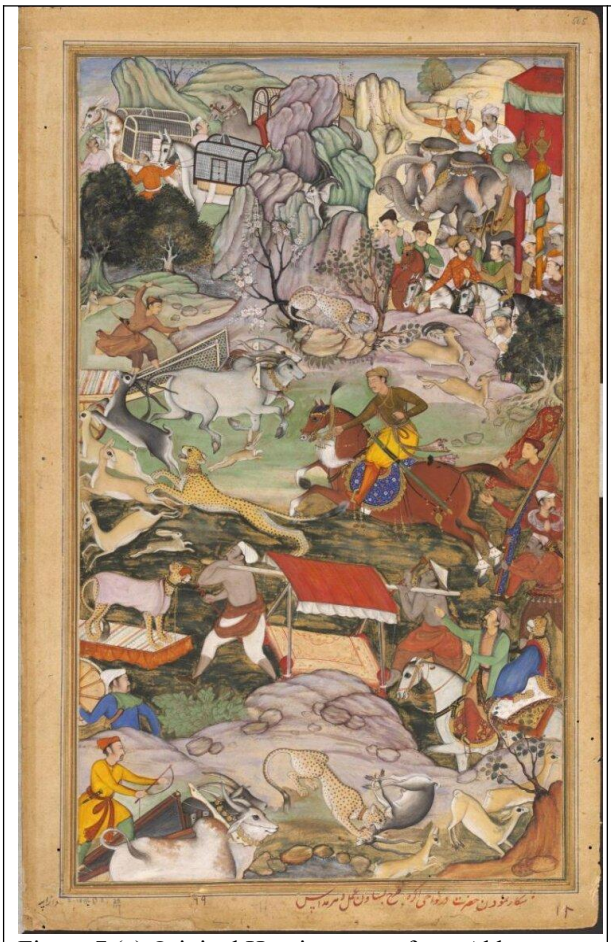

Figure 7 (a) Original Hunting scene from Akbar Nama (Museum (n.d.-g)

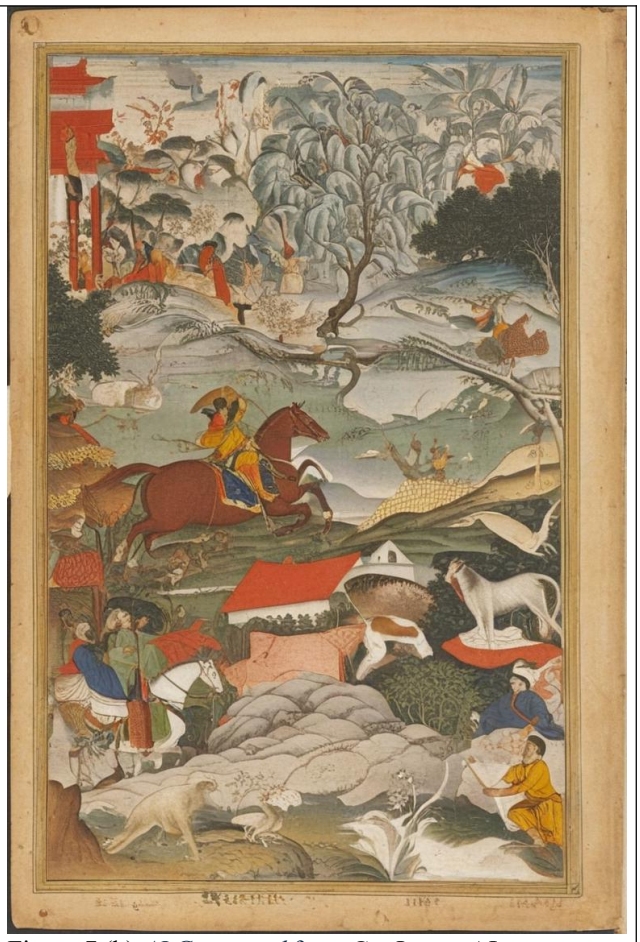

Figure 7 (b) *AI Generated* from Get Image AI

In the dynamic scene painted by Basawan and Dharmdas for the Akbarnama, the Mughal emperor Akbar is portrayed engaged in a cheetah hunt near Agra. Hunting, a favored pastime of the emperor, is vividly brought to life in this composition, not merely as sport but as a spectacle of royal authority and coordination. Akbar, prominently depicted on horseback, is seen in active pursuit, chasing alongside a cheetah. surrounding him, members of the royal entourage participate from various positions-on foot, mounted on horses, and on top of elephants - demonstrating the scale and organization of the hunt. Strategically placed cages appear throughout the scene, serving dual functions: as traps to lure predators using live bait, such as quotes, and as transport enclosures for captured animals. This illustration not only captures the thrill of the chase but also reflects the logistical and symbolic dimensions of imperial hunting practices in the Mughal court.

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Figure 7(a) presents a vivid and densely populated hunting scene, capturing the grandeur and complexity of a Mughal imperial expedition. A diverse array of animals - including two elephants, seven horses, four bulls, nine deer, and three cheetahs in pursuit - fills the composition, contributing to the dynamic and multilayered visual narrative. These elements reflect not only the natural richness of the imperial hunt but also its logistical sophistication and symbolic meaning. Each animal and figure plays a distinct role in constructing a cohesive portrayal of imperial order and spectacle.

In stark contrast, the AI-generated version in Figure 7(b) significantly diminishes the visual density and narrative coherence of the original. Most of the animals have been omitted; only two horses are faintly visible on the right side of the image. These horses are accompanied by riders whose clothing appears flat and lacks the intricate detailing that characterizes traditional Mughal miniature attire. Furthermore, their faces are featureless, stripping the figures of individuality and expression.

The atmospheric and fantastical landscape of the original - particularly the stylized mountains rendered in shades of blue and purple - is replaced in the AI illustration by simplified, deneric trees with pale green foliage. This substitution results in a loss of both visual depth and the otherworldly aesthetic that distinguishes Mughal miniature landscapes.

A striking element in Figure 7(a) is the depiction of a *khama* (a ceremonial standard or weapon) held by a central figure, anchoring the composition and symbolizing leadership and control. In the AI-generated version, however, the *khama* appears inexplicably suspended in the center of the frame, without any figure holding or leading it - rendering it visually disconnected and contextually ambiguous.

While the AI rendering does approximate the color palette of the original to some extent - capturing the tonal contrasts and vibrant hues - the overall detailing suffers. The boundaries between flora, fauna, and background become visually merged, leading to a flattening of the spatial hierarchy and narrative clarity that define the traditional miniature. Ultimately, the AI-generated image lacks the compositional depth, symbolic intent, and meticulous craftsmanship found in Figure 7(a), demonstrating the limitation of algorithmic replication when it comes to culturally and historically rich visual traditions.

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Figure 8 (a) Original Hunting scene from Akbar Nama (Museum (n.d.-h)

Figure 8 (b) *AI Generated* from Get Image AI

Executed by the Mughal court artists Miskina and Sarwan, Figure 8(a), a richly detailed folio from the Akbarnama (book of Akbar), offers a compelling portrayal of the multifaceted nature of imperial spectacles during Emperor Akbar's reign. It combines action, imperial presence, and courtly discipline in a single frame. As part of a larger double-page composition documenting a royal hunting expedition near Lahore in 1567 (modern-day northeast Pakistan), this particular illustration (the right-hand folio) exemplifies the fusion of narrative intensity with ceremonial grandeur.

Central to the composition is the figure of Emperor Akbar (r.1556-1605), mounted on horseback with his sword raised - a venture that conveys not only martial vigor but also his sovereign dominance. Miskina, responsible for the design and the emperor's portrait, and Sarwan, who completed the remaining details, collaborate to deliver a scene that transcends mere documentation of a hunt. The hunting motif - one of Akbar's favored pursuits - functions as a performative assertion of imperial power and control over both the natural and human realm.

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What makes this visual narrative especially layered is its inclusion of disciplinary action within the royal entourage. In the upper right, the courtier Hamid Bakkari, punished for breaching court etiquette by shooting at a royal servant, is shown undergoing public humiliation - his head shaven, forced to ride a donkey backward. This episode, embedded within the larger tableau, illustrates the rigid moral and behavioral standards of Akbar's court and reveals the emperor's commitment to discipline alongside valor.

Rather than isolating the themes of governance and conquest, this artwork integrates them, presenting the emperor as both warrior and ethical ruler. The interplay of action, symbolism, and protocol in this single image reflects a deliberate visual strategy - one that positions Akbar's authority as comprehensive, extending from battlefield glory to the enforcement of internal court decorum.

One of the most visually commanding elements frequently employed in Mughal hunting and battle scenes is the imperial tent - typically rendered in rich maroon and blue hues, embellished with intricate floral motifs to signify royal presence and aesthetic grandeur. In the original composition (Figure 8a), this tent functions not merely as a backdrop but as a symbol of sovereign authority and ceremonial order amidst the chaos of the hunt. In stark contrast, the AI-generated version (Figure 8b) dilutes this visual rhetoric. The tent appears flattened, stripped of ornamentation, its grandeur reduced to that of a generic military shelter, thereby erasing the ceremonial gravitas integral to the Mughal visual language.

Equally problematic is the representation of Emperor Akbar. In the original, his mounted figure is a focal point, both visually and symbolically, embodying command over man and beast. However, in the AI-generated illustration, Akbar's figure dissolves into the muted, dusty tones of the landscape. His once-distinct form - an icon of imperial might - is rendered nearly indistinguishable from the terrain, undermining the compositional hierarchy that the Mughal artists so meticulously constructed.

Animal forms suffer a similar fate. While the original miniature carefully delineates the postures of deer and tigers, accentuating their dynamism and emotional tension, the AI rendition fragments these figures into abstract or broken shapes. The movement of the deer in Figure 8a, which conveys palpable fear and urgency as they flee both the emperor and the tigers, is lost in the AI version, where anatomical proportions and narrative clarity collapse.

Although the AI-generated piece manages to preserve the overall color palette, this superficial similarity is overshadowed by the absence of structural coherence and iconographic precision. The number of animals - critical to the compositional rhythm of the original - is inaccurately rendered, and the visceral interplay between predator and prey is all but erased. What remains is an ambiguous tableau lacking the narrative intentionality and emotional depth that characterize the original painting.

In sum, while the AI illustration may initially appear visually reminiscent of the original, a closer examination reveals critical discrepancies in form, detail, and symbolic function. It not only

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misrepresents individual elements but also fails to grasp the complex semiotic system through which Mughal miniature artists like Miskina and Sarwan conveyed imperial ideology.

Overall, Gell's theoretical lens (1998) interprets this analysis that AI-generated images, while visually similar in layout, fail to act as an index that links viewer, artist, and cultural context in meaningful ways. The visual degradation reinforces Gell's argument that the "indexicality" of art, its capacity to mediate social agency, is lost in reproduction devoid of intentional craftsmanship. The AI lacks the cultural memory, historical embeddedness, and symbolic literacy to produce images that "do" what traditional miniatures did, communicate hierarchy, spiritual meaning, and imperial ideology.

Similarly, the flattening of detail and symbolic cues in the AI version can be interpreted through Appadurai's lens of "the production of locality" (1996) in digital culture. While the AI output mimics stylistic elements, it disconnects the artwork from its historical locality, including the courtly environment, aesthetic grammar, and socio-political message encoded in the original. The regenerative image becomes a simulacrum, it gestures toward the past without embodying the social artistic relations that produced the original artifact. Appadurai's insights also hold relevance here, while the digital re-creation participates in the global circulation of cultural forms, they do so through displacement, not continuity. These AI outputs become part of a deterritorialized visual economy, aestheticizing history without faithfully transmitting it.

Conclusion:

The visual data generated through prompt-based tools such as Get Image AI and Leonardo reveals both the potential and the limitations of AI in engaging with traditional art forms. While the AI-generated images may initially appear visually engaging or loosely aligned with the originals, a closer analysis exposes significant deviations in detail, symbolism, and narrative cohesion. For example, the intricacy of foliage, facial expressions, spatial layering, and Persian calligraphy, hallmarks of Mughal artistry, are often flattened, distorted, or omitted altogether in the AI outputs. These differences reflect broader concern about the role of human intentionality, cultural literacy, and artistic technique in the production of meaning, and whether AI-generated visuals can ever authentically reproduce or replace such historically rich works.

Drawing on Alfred Gell's theory of art as a form of social agency, this research contends that while AI may replicate visual forms, it lacks the embedded social relationships, ritual functions, and performative contexts that gave historical miniatures their cultural weight. Similarly, Arjun Appadurai's ideas on cultural representation in the digital era frame these AI referents not as neutral replications of AI's role on cultural heritage representation and preservation, particularly when it comes to historically situated, artistically layered, and symbolically charged visual traditions such as Mughal miniature paintings.

At the intersection of digital innovation and heritage studies, this research raises critical questions about authenticity, authorship, and the ethics of cultural reproduction. While AI offers new avenues for engaging with historical illustration, potentially aiding in documentation,

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restoration, and outreach, it must be employed with caution and cultural sensitivity. The unique expressive power of miniature paintings lies not only in their visual composition but in their visual composition but in the historical, political, and spiritual worlds they invoke.

In conclusion, AI can serve as a supplementary tool in heritage preservation, but it cannot replace the depth of human creativity embedded in traditional art forms that imbues art with cultural significance and emotional depth. Future research should focus on enhancing AI technologies that respect and preserve the unique qualities of traditional art forms, ensuring that they continue to be appreciated and understood in their full cultural context.

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