

The Integration of Artificial Intelligence in Sikh Shrines: Enhancing Tradition and Accessibility

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Abstract

The purpose of the present study is to expound on the significance of the integration of Artificial Intelligence in Sikh shrines could enhance tradition and accessibility. Artificial Intelligence (AI) has significantly influenced various facets of human life, including religious and spiritual traditions. As one of the youngest religions, Sikhism paves the way for wider research in Sikh structures, including Sikh Shrines. Sikh Shrines also known as Gurudwaras are an essential part of Sikh culture and heritage. The integration of AI into these sacred spaces has streamlined operations, enhancing security, management, accessibility, and the dissemination of religious teachings. This paper explores the historical and cultural relevance of Gurudwaras while analyzing the role of AI in improving their functionality. It highlights AI-driven advancements, such as virtual pilgrimages, automated translations, digitalization and preservation of Sikh scriptures and intelligent crowd control, which offer new ways to enrich the spiritual experience. AI-powered apps can guide devotees through personalized spiritual content based on their preferences. The fusion of AI and Gurudwara operations presents a promising frontier where technology meets spirituality. Additionally, the paper discusses the ethical implications and challenges of incorporating AI in religious settings, ensuring that technological progress aligns with Sikh traditions and values. The study will be based on a literature review.

Keywords: Sikh shrines, AI, artificial intelligence, gurudwaras, gurus, historical, dharamshala

INTRODUCTION

Artificial Intelligence is the next step toward advanced technology. “The capability to combine Artificial intelligence (AI), computers, and embedded systems, such as robots, that display cognitive advances, intelligence, learning, adaptability, and decision-making abilities, is referred to as intelligence” [1]. Artificial Intelligence (AI) is an innovative technology that allows machines to mimic human thinking, learning, and problem-solving abilities. AI uses powerful computer programs and large amounts of data to understand spoken words, spot patterns, make choices, and even guess what might happen next. It plays a significant role in everyday life, powering virtual assistants, like Siri and Alexa, suggesting movies and products, enabling self-driving cars, and supporting doctors in diagnosing diseases. At first, Artificial Intelligence (AI) and religion might seem completely different – AI is based

on logic and data, while religion is grounded in faith and spiritual beliefs. However, with technological advancements, a unique synergy is emerging between the two. AI is being used to enhance religious practices, while religion provides ethical and philosophical perspectives that guide AI’s development.

The connection between AI and religion extends beyond mere convenience; it represents a process of adaptation. Religious institutions are utilizing AI to enhance accessibility to faith, particularly in a digital era where individuals seek spiritual engagement beyond physical limitations. However,

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this integration prompts significant ethical and philosophical questions: Can AI genuinely understand spirituality, or does it simply serve as a tool? How can religious traditions embrace technological advancements without losing their authenticity? And that also the religion which has its beginning from the sixteenth century.

Sikhism emerged as one of the worlds' youngest religions. It was founded by Guru Nanak Dev (1469–1539) and further shaped by the nine succeeding Gurus between 1469 and 1708. Guru Gobind Singh, the tenth Guru, was the last human Guru and declared the holy scripture, Sri Guru Granth Sahib, as the eternal Guru.

By analyzing the intersection of technology and faith, this study aims to provide insights into how AI is reshaping religious experiences while respecting spiritual and cultural traditions and how integrating AI in Sikh shrines could enhance tradition and accessibility. The challenges we might face during the integration.

HISTORICAL BACKGROUND OF SIKH SHRINES

Sikh Shrines also known as Gurudwaras are the place of worship for the Sikh community. The word Gurdwara is a compound of the two Punjabi words, Guru and Dwara, literary meaning the Guru's gate [2]. Earlier, these places were called "Dharamshala", which literally means a free lodge. In today's context, a Dharamshala refers to a religious place where, in addition to receiving free food and shelter, devotees also visit to gain spiritual merit [2]. Dharamshala were established by Guru Nanak Dev, where people would gather around to listen to the teachings of Gurus. The institution of Sangat and Pangat was established. Sangat means congregation of followers Pangat, which literally means "a row" or "a line," refers to the tradition where followers sit together in a single line to share a meal from the community kitchen, emphasizing equality and humility [2]. These institutions were further spread by the second guru, Guru Angad Deva (1504–52), and the third guru, Guru Amar Das (1479–1574). Fourth guru, Guru Ram Das (1534–81), in 1577, his wife was granted land by Emperor Akbar, and he had a tank dug there and moved to Goindwal, which was destined to become a religious capital of Sikhism. This Place came to be known as Guru ka Chak, Chak Ram Das [3]. The fifth guru, Guru Arjun (1563–1606), when came to Gaddi, his first task was to complete the building of a temple in Cak Ram Das. He invited the Muslim divine, Mian Mir of Lahore to lay the foundation stone of the Harmandir Sahib [3], which became one of the first majestic gurudwara of Sikhism. Later, in 1604, Guru Arjun compiled the Adi Granth of holy hymns. The first copy of Adi Granth was placed in Harmandir Sahib and the copies of it were installed in different Dharamshalas. These Dharamshalas became a religious place and from the sixth guru, Guru Hargobind (1595–1644), onwards these places came to be known as Gurudwaras. The Tenth guru, Guru Gobind Singh (1666–1708), when appointed Sri Guru Granth Sahib as the Guru, further raised the importance of Gurudwaras as a religious place [4].

With the execution of Banda Singh Bahadur in 1716, the struggle and persecution of the Sikhs was the severest during the mid-18th century [3]. The history of Sikhism from the fall of Banda to the permanent occupation of Lahore by the Sikhs in 1768 A.D. is a record of the struggle between the declining power of the Mughals and the rising state of the Khalsa.

There were, however, some who established institutions, admitted chelas or followers, and became heads of their deras, akharas, and Gurudwaras and came to be known as Mahants (Udasi or Nirmale) [2].

Later on, with the rise of Sikh Misaldar in the late eighteenth century and Maharaja Ranjit Singh coming into power in 1799 A.D., led to rich tax-free jagirs to gurudwaras. which led to the increase in income of some of the important Gurudwaras Mahanta's making them corrupt. With the annexation of Punjab by Britisher in 1849 most of the control of the gurudwaras went to hereditary Mahants and Mahants nominated by the government [5]. This led to the movements, like Akali's struggle, to reform these institutions. Later, the suppression of Kuka's and these movements led to the establishment of the Singh Sabha movement (1873 A.D.) which had wider mass appeal and a greater impact, which led to

the control of gurudwaras from Mahants to Shiromani Gurdwara Prabandak Committee in 1925 under the Sikh Gurudwara Act, formed to manage these Sikh shrines with honesty.

IMPORTANCE OF SIKH SHRINES

Sikh shrines are not only seen as a place of worship but also a place where people could gain knowledge. It is an integral part of Sikh life as during birth, the *namkaran* of the child is done in Gurudwara, whereas the marriage ceremony of Sikhs also takes place in Gurudwara. The langar intuition is the main part of all Gurudwara where free food is given to all the devotees.

Each Gurudwara has its own historical background, most of them are made where the Guru's came and have left some history behind them. Gurudwaras not only became a religious place but also a symbol of identity for the Sikhs.

Each gurudwara has certain important features – like (i) The main congregation hall – where Sri Guru Granth Sahib is placed and people can listen and recite its verses, (ii) A langar hall – it's a free kitchen for the community, (iii) A seran, a place to stay for devotee, and (iv) A Nishan Sahib, which is hoisted on a pole – it's a yellow triangular flag which can easily be seen from far away [5].

ROLE OF AI IN ENHANCING SIKH SHRINES

AI-Enhanced Security and Crowd Management

Ensuring security at Sikh shrines, which receive thousands of visitors daily, is a significant challenge. AI-powered technologies have improved safety measures through facial recognition, allowing smart surveillance systems to identify individuals and detect potential security threats. Automated threat detection further bolsters security by analyzing live video feeds to spot unusual activity and generate instant alerts. Additionally, AI aids in managing crowds by predicting visitor patterns, controlling entry points, and facilitating emergency responses. For instance, at the Golden Temple, AI-based crowd monitoring can regulate the flow of devotees, reduce risks and ensure a seamless pilgrimage experience during peak.

Immersive Virtual and Augmented Reality (VR/AR) Experiences

AI-driven virtual and augmented reality technologies provide a unique way for devotees to experience Sikh shrines remotely. These innovations are particularly valuable for elderly and disabled individuals who cannot physically visit the shrines, allowing them to explore these sacred places through digital platforms. The global Sikh community also benefits, as they can engage with their spiritual heritage through interactive and immersive online experiences. Moreover, AI-powered educational programs use virtual tours to offer insights into Sikh history and traditions. With the increasing adoption of VR in religious institutions worldwide, Sikh shrines can utilize these advancements to strengthen global connectivity and inclusivity [6].

AI-Powered Translation and Interpretation of Sikh Scriptures

The Guru Granth Sahib and other Sikh scriptures are primarily written in Gurmukhi, which can pose a language barrier for non-Punjabi speakers. AI-driven translation technology helps bridge this gap by providing instant translations of Sikh texts into multiple languages, making them more accessible to a global audience. Voice recognition and speech-to-text technology further enhance this experience by converting Gurbani kirtans into text and offering real-time translations [7]. AI-powered chatbots also provide quick and accurate answers to religious and historical queries, making Sikh teachings more approachable. For example, AI-based applications can help non-Punjabi speakers understand Gurbani, fostering greater inclusivity within the community.

Preserving Sikh Heritage Through AI

Many historical Sikh manuscripts, texts, and artworks are vulnerable to deterioration over time. AI plays a crucial role in the preservation of this heritage by utilizing optical character recognition (OCR) technology to digitize ancient handwritten manuscripts, ensuring they remain accessible for future

generations. AI-powered archiving systems further assist in categorizing and organizing Sikh literature, making historical documents easy to locate and study. Additionally, AI contributes to the restoration of faded murals, paintings, and architectural structures in Sikh shrines by analyzing and reconstructing damaged areas with precision. By integrating AI into conservation efforts, Sikh institutions can ensure that sacred texts, artworks, and cultural artifacts are safeguarded for posterity [8–10].

AI-Driven Financial Management and Donations

Donations are essential for the upkeep of Sikh shrines, making efficient financial management a priority. AI-powered digital payment systems enhance security and transparency by detecting fraudulent activities and streamlining the donation process. Predictive analytics further optimizes resource distribution by analyzing financial data, ensuring that funds are allocated efficiently for community programs and shrine maintenance. Automated systems for receipt generation and donor record-keeping simplify financial administration, making transactions more organized. By leveraging AI in financial management, Gurdwaras can promote accountability and ensure the responsible use of funds for religious and social initiatives.

CHALLENGES

In addition to the previously discussed challenges, integrating Artificial Intelligence (AI) into Sikh shrines introduces further ethical considerations:

- *Algorithmic Bias:* AI systems can sometimes reflect the biases found in the data they learn from, which can result in unfair or unequal treatment of certain groups. In religious contexts, this could result in the misinterpretation of sacred texts or the marginalization of certain community groups. Ensuring that AI algorithms are free from bias is crucial to uphold the principles of equality and justice inherent in Sikhism [11].
- *Authenticity of Religious Teachings:* Utilizing AI to disseminate religious teachings raises concerns about the authenticity and accuracy of the information provided. Content created by AI might not have the depth or full understanding that human religious scholars provide, which can sometimes lead to misunderstandings or incorrect interpretations of Sikh teachings. Involving knowledgeable religious authorities in the development and oversight of AI tools is essential to maintain the integrity of religious teachings.
- *Impact on Employment:* Automating certain tasks within Gurdwaras, such as administrative duties or educational programs, could lead to job displacement for individuals traditionally performing these roles. This shift may affect the livelihoods of community members and alter the communal atmosphere of the shrine. Developing strategies to retrain and integrate affected individuals into new roles that complement technological advancements is important.
- *Spiritual Experience and Human Connection:* The essence of visiting a Gurdwara lies in communal worship and the human connections formed during religious ceremonies. Over-reliance on AI, especially in facilitating virtual experiences, might diminish the value of in-person interactions and the collective spiritual experience. Balancing technological convenience with the preservation of communal worship practices is vital.
- *Decision-Making Authority:* Implementing AI in decision-making processes within religious institutions raises questions about authority and control. Relying on AI for decisions related to religious practices, community management, or ethical dilemmas may undermine traditional leadership structures and the nuanced understanding that human leaders provide. Establishing clear guidelines delineating the scope of AI's role in such matters is necessary.

Addressing these additional ethical considerations requires a thoughtful approach that harmonizes technological innovation with the core values and traditions of Sikhism. Engaging religious scholars, technologists, and the broader community in open dialogues can facilitate the responsible integration of AI into Sikh shrines, ensuring that technology serves to enhance the spiritual and communal life without compromising fundamental principles.

CONCLUSIONS

Sikh shrines are an integral part of Sikh history; it has become an important part of the identity of Sikhs. There have been a lot of changes in the institution of Sikh shrines, from Dharamshalas to Gurdwaras, changes in their structure and architecture, and even in the change of their administration. Sikh shrines are not only the place of worship but a place where people can come together to gain knowledge, do community service. The rich historical background of some of these Gurdwaras helps the community to be attached to it and get connected to it. AI has the potential to significantly advance Sikh shrines by improving security, accessibility, heritage preservation, and devotional experiences. By leveraging AI-driven technologies, such as virtual pilgrimages, real-time translations, automated crowd management, and financial transparency, Sikh shrines can offer a more inclusive and enhanced experience for devotees worldwide. However, careful implementation, ethical considerations, and community involvement will be essential to ensure AI aligns with Sikh values and traditions. The future of AI in Sikh shrines is promising, offering new ways to deepen faith, preserve history, and serve humanity more effectively.

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