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DIGITISING DHARMA: INTEGRATING BUDDHIST PHILOSOPHY INTO INTERDISCIPLINARY KNOWLEDGE SYSTEMS THROUGH ARTIFICIAL INTELLIGENCE - WITH SPECIAL REFERENCE TO INDIAN BUDDHIST SITES

Samikshya Madhukullya [1]
Emmanuel Ande Ivorgba

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A B S T R A C T

The given mixed-methods study explores the application of Buddhist philosophy to the interdisciplinary body of knowledge through AI-based digitisation and educational approaches, focusing on Indian Buddhist sites (Bodh Gaya, Sarnath, Nalanda, Sanchi, Ajanta-Ellora). Fusing qualitative interviews with 12 professionals and thematic examination with quantitative results reported in national and institutional activities on digitisation, the study examines the outcome of preservation and transcription and translation quality enabled by AI and the integration into teaching and learning. The main insights are that the access increase through AI-enabled digitisation is quite high (national initiatives reports, the number of digitised manuscripts is more than hundreds of thousands).However, Buddhist epistemology provides an ethically justified approach (mindfulness, interdependence, compassion) to be employed during AI regulations and interdisciplinary curricula. The implications of culture heritage policy, AI ethics, and future research agendas are debated in the paper.

1. INTRODUCTION

The preservation, interpretation and teaching of cultural heritage are influenced by Artificial Intelligence (AI) and changing digital technologies (Gîrbacia, 2024). The rich Buddhist heritage of India is concentrated around places such as Bodh Gaya, Sarnath, Nalanda, Sanchi and Ajanta-Ellora, confronting the problem of environmental deterioration, lack of accessibility and scattered manuscripts (Gandhi, 2018). The digitisation initiative has become partially aided by AI tools of optical character recognition (OCR), handwritten text recognition (HTR), image restoration, and translation,which expanded access options and caused ethical issues regarding cultural ownership, cultural representation, and algorithmic bias (ManZuch et al., 2025; Pansoni et al., 2023). This paper, Digitising Dharma, examines the convergence of Buddhist philosophy and AI-oriented digitisation and how the Buddhist epistemological principles can be used to inform ethical AI-based practices. Moreover, it also reflects how mixed methodological approaches to the more open-ended questions can lead to both technical and community-focused conclusions.

1.1 Statement of the Problem

Although extensive scholarly interest, a significant amount of the Buddhist textual and material heritage of

[1] Corresponding author: Samikshya Madhukullya
Email: madhusami1000@gmail.com

India remains mostly inaccessible or threatened. While much of the work with national missions and institutional partners on the digitalisation of substantial manuscript holdings has been made available, there is less integration of Buddhist philosophical systems into AI ethics and interdisciplinary undergraduate studies. The study explores the question of whetherit is possible to achieve this relying on AI-driven digitisation in order to save the Indian interpretation of Buddhism and inculcate Buddhist moral values into the management of digital knowledge platforms.

1.2 Research Questions

1. What effects of AI and digitisation initiatives have been attained regarding the preservation and accessibility of Indian Buddhist site-related manuscripts and artefacts?
2. How can Buddhist philosophies (such as interdependence, mindfulness, compassion) guide the AI ethics and design when working on digitisation in digital projects?
3. Which are the deliverable results (accuracy of transcriptions, accessibility among users, digitised volume) of major Indian digitisation initiatives, and what are the perceptions of key stakeholders in their results?
4. How can an interdisciplinary curriculum incorporate digitised Buddhist resources to foster ethical AI literacy?

1.3 Objectives of the Study

1. To record AI-assisted digitisation projects of major Indian Buddhist sites.
2. To examine quantity-related results (volume digitised, transcription/translation accuracy, metrics of access by users) of national and institutional projects to evaluate the results.
3. To measure the expert understanding of Buddhism philosophy introduction into artificial intelligence government using qualitative interviews.
4. To offer a paradigm of increasing digitised Buddhist resources to interdisciplinary education through curriculum integration.

1.4 Significance of the Study

This study contributes to cultural preservation policy, scholarship of AI ethics, and digital pedagogy. Giving attention to national digitisation efforts and the Indian Buddhist sites, it anticipates regionally inspired practices and suggests a Buddhist ethics-based philosophical framework of responsible AI development.

1.5 Scope and Limitations

Scope: The research focuses on five exemplary Indian Buddhist locations (Bodh Gaya, Sarnath, Nalanda, Sanchi, Ajanta-Ellora) and national/institutional project digitisation projects like the National Mission for Manuscripts, and the various partner organisations (such as BDRC projects). Limitations: The study is based on secondary project measures and a purposive sample of 12 expert interviews, as opposed to a large-scale field survey. Similarly, some site-specific digitisation statistics are made publicly available, at varying levels of detail.

2. LITERATURE REVIEW

The literature covers the Buddhist epistemology, digital humanities, AI ethics, and cultural heritage digitisation. The interdependence, non-self, compassion, and mindfulness are the epistemic and ethical concepts in Buddhist scholarship (Chu & Vu, 2022; Hariyanto, 2025). The studies of the digital humanities report about the use of AI in preservation of manuscripts, advancement of OCR/HTRO tools and image restoration (Hutson et al., 2023; Jain et al., 2025). The literature on AI ethics emphasises the need to have culturally sensitive models to reduce hubris and achieve inclusive design (Mergen et al., 2025; Zallio et al., 2025). The policy-level ambitions in India in recent times (in the form of the National Mission for Manuscripts; Gyan Bharatam Mission) exemplify the governmental interest in undertaking massive digitisation by adopting AI-based HTR and metadata solutions, upon which this research is built.

3. RESEARCH METHODOLOGY

The proposed study employs a convergent mixed-methods design combining qualitative and quantitative data gathering conducted in 2023-2025. The qualitative strand entailed semi-structured interviews with the stakeholders (archivists, AI researchers, heritage managers, and Buddhist studies scholars) through video call, interviews lasted on average 45 -60 minutes, and were transcribed word-for-word. The analysis was done using NVivo to do coding and thematic analysis in linewith Elliott-Mainwaring (2021).

The quantitative strand combined national mission and institutional reporting, and those that were site-specific digitisation records. The important measures were: (a) the number of manuscripts that were digitised, (b) the number of pages/ folks that were digitised, (c) the rates of transcription/ translation AI accuracy, and (d) the annual rates of user access/download of digital repositories. The trends can be presented using the means of the descriptive statistics, where possible, simple pre- and post-comparisons (such as year of AI model deployment/transcription accuracy) have been calculated. Ethics: Informed consent of the interviewees was obtained. Similarly, institutional data were obtained on the basis of the public reports and the company communications. The studyfollowed ethical terms of carrying out cultural heritage research and anonymised the interview data where demanded.

4. SITE-SPECIFIC DIGITISATION AND AI PROJECT DATA

The quantitative dataset draws on public reports and institutional communications concerning digitisation efforts:
- National Mission for Manuscripts (NAMAMI) reports digitisation of ~350,000 manuscripts (approx. 35 million pages/folios) across India as part of national preservation efforts.
- Nalanda-related collections: Nalanda University and partner libraries report digitisation of approximately 1,200 manuscripts and several thousand pages from local collections.
- Ajanta-Ellora and cave paintings: AI-assisted imaging and restoration projects have been piloted to monitor and digitally preserve mural paintings and to support disaster resilience.
- Bodh Gaya: academic and institutional initiatives (including museum digitisation and university AI departments in the region) have begun collaborating on metadata creation, 3D scanning of artefacts, and digital exhibition development.
- BDRC and Indian partners have supported scanning and archiving of several collections relevant to Indian Buddhist heritage.
Sources for these figures include NAMAMI public releases, institutional reports from Nalanda University and IGNCA, and organisational blogs and press releases from digital heritage projects. Specific references are included in the References section.

5. DATA ANALYSIS AND FINDINGS

Quantitative analysis: Descriptive statistics give high levels of digitisation scale in the country. The reported data on digitisation of NAMAMI (350,000 manuscripts) is indicative of massive investment and infrastructure facilities. Similarly, in pilot projects using AI-assisted HTR, unfairly high transcription errors produced by the model were reported to be decreasing to over 88-92% at both machine retraining stages and domain-specific lexicon infusion (institutional reports).
Observations on the site: Nalanda and libraries elsewhere have continued to advance in digitisation of the local manuscripts, so that researchers can research in them through searchable catalogues. Ajanta-AI imaging program enhanced capture of high-resolution images and the detection of abnormalities to indicate early conservation alerts. The local academic institutions of Bodh Gaya (Magadh University) are establishing AI potential, which possibly can be combined with heritage digitisation.
Qualitative themes: Themes identified in qualitative analysis of interviews provided four broad themes, namely,(1) Ethical stewardship emphasises on culturally sensitive access and provenance; (2) Technological affordances highlights that AI expands reach but requires domain adaption, (3) Pedagogical potential refers that digitalised resources support interdisciplinary curricula, and (4) the theme of collaborative governance states stakeholder networks are critical for sustainability.

6. FINDINGS (SUMMARY)

1. The digitisation of Indian Buddhist sites facilitated by AI leads to greater access and greater capacity to retain the material provided. Similarly, national datasets indicate that mass facilities in digitisation have been made under coordinated missions.
2. Specialised AIs operating within the domain of handwriting recognition (HTR/OCR trained on Pali, Sanskrit, scripts derived from Brahmin in some way) are significantly more precise in their transcription results on local data.
3. Buddhist ethics, especially compassion and interdependence, are perceived as heuristics by stakeholders and are useful for designingaccess policies and community interaction.
4. There are difficulties: the standardisation of metadata, the continuity of funds, the reconciliation between the open access and the cultural concerns, and the consideration of the appropriateness of graphic display to the local custodial constituencies.

7. DISCUSSION

With the intersection between Buddhist philosophy and AI digitisation, the AI formation forms a relationship of reciprocity since AI enhances conservation and access to learning. Similarly, Buddhist ethics provides a framework to focus on non-harm, fair access, and interpretive humility. The evidence presented in this study gives evidence-based recommendations for adding mindfulness-based stakeholder meetings to project planning. Moreover, educate HTR models on multilingual bodies with local writing systems, and create curricula involving the use of digitised primary sources to learn technical and ethical lessons. At the policy level, the example of national programs like the National Mission for Manuscripts is a successful activity on a larger scale, but it needs to be culturally aware in order to prevent data extraction activities.

8. CONCLUSION

Digitising Dharma has shown that a combination of Buddhist school philosophical ideologies and approaches to AI-based digitisation is possible and ethically productive. Projects can harness cultural value and reduce harm by preempting interdependent and compassionate projects with technical performance, measured in terms of transcription accuracy and volume digitised. The next generation of research will need longitudinal studies of digitisation results, scaling the participation model to custodial populations, and

refurbishing AI models of regional scripts and oral traditions.

9. LIMITATIONS

The research was based on the public reports and a selection of interviews by a purposive sample; therefore, it can be limited to generalisation. The institutionally aggregated levels are reporting some site-specific statistics and may be obscuring the local variance. Ethnographic studies in the field would enhance the use of contextual knowledge in each site.

10.POLICY AND PRACTICAL RECOMMENDATIONS

1. Focus on communal structures of digitisation comprising local custodians and scholars.
2. Automated AI model training for regional scripts and multilingual HTR.
3. Create ethical access policies that are based on culturally-grounded principles (such as community consent, tiered access).
4. Introduce digitalised resources in interdisciplinary curricula for AI ethics, digital humanities, and religious studies.

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Samikshya Madhukullya
Global Interfaith University USA &
Teaching Faculty of Sociology,
KKHSOU Tezpur College Study Centre Assam, India
madhusami1000@gmail.com
ORCID: 0009-0002-1206-1284

Emmanuel Ande Ivorgba
Global Interfaith University, USA
info@globalinterfaithuniversity.net
ORCID: 0009-0009-3264-7371