



ISSN 2827-8151 (Online)

SRAWUNG: Journal of Social Sciences and Humanities

<https://journal.ifpublisher.com/index.php/issn>

Vol. 4, Issue 4, (2025)

doi.org/10.56943/issn.v4i4.870

Decoding the Sacred: Artificial Intelligence and the Symbolic Knowledge Structures of African Traditional Religion

Moses Adeolu Agoi¹, Bukola Abosede Folaranmi², Zohaib Hassan Sain^{3*}, Aulia Luqman Aziz⁴, Shahzadi Hina Sain⁵

¹agoi4moses@gmail.com, ²iyafola@gmail.com, ³zohaib3746@gmail.com,

⁴aulialuqmanaziz@ub.ac.id, ⁵shahzadi.hina88@gmail.com

^{1,2}Lagos State University of Education, Nigeria, ³Superior University, Pakistan,

⁴Universitas Brawijaya, Indonesia, ⁵Beaconhouse Head Office, Pakistan

*Corresponding Author: Zohaib Hassan Sain

Email: zohaib3746@gmail.com

<https://orcid.org/0000-0001-6567-5963>

ABSTRACT

African Traditional Religion (ATR) is based on symbolic systems that reflect cosmology, ethics, spirituality and social order, which are represented through divination, rituals, proverbs, sacred objects as well as texts such as Yoruba Ifa verses. Scholars nowadays focus not only on their multivocal character but also on their epistemic and moral functions: symbols act as organs of knowledge no less than objects of cultural artefacts. AI tools, by symbolically representing that knowledge, through ontologies and explainable learning, provide means to decode, and maintain such sacred systems cultural sensitively. Indicatively, the article Preserving Indigenous Knowledge: Leveraging Digital Technology and Artificial Intelligence describes the way interactive platforms and AI-based applications preserve indigenous knowledge, without violating cultural guidelines and intellectual property rights. Using Classical Machine Learning and Deep Learning, Adinkra Symbol Recognition in Ghana was highly accurate in classifying Adinkra symbols. The results of the studies indicate that AI can improve preservation, access, and learning; however, it is unable to reproduce spiritual intention and group validation. Such ethical concerns as reductionism, digital colonialism, and cultural ownership are not new to the recent literature. This paper thus suggests an alternative approach in which AI would be used to supplement AIR custodianship to make sure that the knowledge is not stale, but dynamic, secure, and useful in the digital era.

Keywords: African Traditional Religion, Artificial Intelligence, Cultural Preservation, Symbolic Knowledge

INTRODUCTION

African Indigenous Religions (AIRs) represent sophisticated knowledge systems that extend far beyond spiritual structures. AIRs function as epistemologies wherein symbols, myths, proverbs, and rituals serve as vehicles for transmitting cosmological understanding and cultural identity (Elawa, 2024; van Beek, 2020). Unlike Western rationalist traditions emphasizing linear logic, AIRs employ symbolic mediation through oral, material, and ritual practices to encode cosmological truths. Hackett et al. (2025) reports that approximately 10 percent c. Traditional divination practices persist in Nigeria, Ghana, Benin, and South Africa, frequently coexisting alongside Abrahamic faiths. Turner (1973) documents that more than 30 percent of Yoruba families in Nigeria consult Ifa diviners annually, demonstrating the sustained importance of indigenous epistemologies in African societies.

AIRs encode knowledge through material and non-material forms. Material sacred expressions such as Adinkra symbols in Ghana, Nsibidi ideograms in Nigeria, and Kongo cosmograms constitute organized systems of philosophical thought. Myths, folktales, praise poetry, and incantations represent intangible oral traditions functioning as repositories of collective memory. UNSECO (2024) warns that approximately 40 percent of African oral heritage faces threat from globalization, urbanization, and language degradation. The sophistication of symbolic systems is exemplified by Ifa divination, which employs 256 oddu, each containing verses, parables, and proverbs that follow a combinatorial logic analogous to binary coding in computer science. Abimbola (1997) proposes that Ifa's symbolic logic constitutes a complex computational system capable of prediction. The Nsibidi script codifies social, legal, and spiritual information through more than 1,000 symbols, while Akan Adinkra symbols like Sankofa embody principles of past-to-present learning applicable to contemporary education. Howard (2020) reports that 47 percent of Christians and Muslims in West Africa incorporate at least one yearly indigenous religious ceremony into their practice, demonstrating that symbolic knowledge structures occupy a central position in shaping contemporary African cultural identity.

Artificial Intelligence has emerged as a transformative tool for interpreting and structuring complex knowledge systems. While historically deployed in medicine, finance, and engineering, AI applications in cultural and symbolic systems represent an expanding frontier. World Bank Group (2024) projects a 24 percent compound annual growth rate for the African AI market during 2023 to 2030, driven by expanding digital infrastructure investment. AI's semiotic potential is considerable. Google Arts and Culture has digitized more than 40,000 African artifacts and symbols, while AI models are trained to comprehend indigenous languages and scripts. Natural Language Processing models decode metaphors, proverbs, and oral traditions by identifying symbolic patterns across corpora. In

2023, researchers at the University of Cape Town developed an NLP model that organized 20,000 Yoruba proverbs into thematic categories with 82 percent accuracy.

In 2024, UNESCO's Symbols of Humanity project employed AI image recognition to identify 500 Adinkra symbols with 92 percent accuracy. Conversely, fundamental questions remain regarding AI's capacity to apprehend the spiritual substance of symbols. Howard (2020) found that only 36 percent of African respondents express trust in AI for interpreting spiritual heritage. However, AI's decoding capacities parallel the combinatorial reasoning of systems such as Ifa, wherein binary divination processes structurally resemble the 0s and 1s logic of digital computation. Scholars estimate that Ifa can generate 256 base configurations yielding more than 16 million interpretive possibilities. Ifa's binary logic as precolonial African computation compatible with contemporary digital architectures, challenging the characterization of indigenous symbolic systems as primitive superstition.

The convergence of Artificial Intelligence and African Indigenous Epistemology represents the intersection of traditional symbolic representation and computational logic (Lewis et al., 2025; Ofosu-Asare, 2025). African epistemologies are inherently relational, embedding knowledge within rituals, myths, and shared experiences rather than abstracting it into discrete objects. Ifa divination exemplifies this approach, with symbolic verses linking contemporary situations to ancestral wisdom, while Nsibidi writing encodes realities in ideographic symbols requiring community interpretation. In contrast, AI relies upon statistical probabilities derived from vast training datasets to generate knowledge rather than human intuition. Although fundamentally different, both systems employ combinatorial logic. Both emphasize pattern recognition, symbolic interpretation, and outcome prediction. UNSECO (2024) reported more than 70 AI-based cultural heritage projects globally, 14 of which address African contexts.

A University of Lagos research team trained an AI system on 12,000 Ifa verses, achieving 80 percent accuracy in classifying thematic content. However, tensions persist at this intersection. Indigenous epistemologies emphasize secrecy, ritual authority, and metaphysical depth, whereas AI prioritizes transparency, reproducibility, and data accessibility. Adaba and Boio (2024) reported that 62 percent of West African respondents expressed concern that digital technologies would diminish indigenous spirituality, reflecting legitimate skepticism about ethical engagement with sacred knowledge. Yet opportunities exist. AI can facilitate language revitalization, as African languages embedded in sacred rituals face endangerment. UNSECO (2024) projects that by 2050, 30 percent of African languages will be extinct. AI-powered speech recognition systems for Yoruba, Igbo, and Swahili provide mechanisms for preserving these epistemologies. Furthermore, indigenous epistemologies can inspire AI research directions. African relational ontologies emphasizing interconnections among human, spiritual, and

natural worlds may enrich AI ethics frameworks, while the Ifa concept of destiny offers models for developing AI systems that are predictive yet responsive to human agency.

The rapid advancement of AI raises fundamental questions regarding its interaction with cultural and spiritual knowledge systems (Levin & Minyar-Belorushev, 2024). Although AI has demonstrated capacity in interpreting symbols and categorizing texts, its application to African Indigenous Religions remains limited. The central research problem concerns whether AI systems, grounded in computational logic, can meaningfully encode symbolic knowledge structures that are inherently spiritual, metaphorical, and ritualistic without perpetuating misrepresentation, appropriation, or reductionism. This problem's urgency is substantiated by evidence. Hackett et al. (2025) data indicates that although only 10 percent of Africans explicitly identify with indigenous religions, 47 percent engage in syncretic spirituality incorporating indigenous rituals with Christianity or Islam. However, there are 40 percent of African oral cultures face endangerment, with Africa having digitized less than 15 percent of its sacred heritage materials compared to more than 60 percent in Europe (UNSECO, 2024).

African Union (2024) reports that Africa generates only 2 percent of global AI research output despite representing more than 16 percent of the global population, constraining the continent's capacity to shape AI's engagement with its heritage and risking perpetuation of colonial patterns of knowledge extraction. This research therefore addresses three interconnected objectives. First, it examines AI's interpretive capacity regarding African symbolic knowledge by testing AI systems on oral tradition decoding, symbolic text categorization, and cultural symbol identification including Adinkra, Nsibidi, and Ifa verses, testing the hypothesis that computational models can replicate interpretive processes mediated by priests, griots, and elders.

Second, it investigates epistemological tensions between AI and indigenous spirituality, examining whether symbolic knowledge is diminished through machine-mediated interpretation. Third, it proposes ethical and reciprocal frameworks for AI and AIR integration, identifying approaches wherein AI supports preservation, archiving, and accessibility while respecting ritual secrecy and spiritual meaning through mechanisms such as AI-facilitated closed online archives accessible exclusively to initiated communities. The significance of addressing this intersection lies both in protecting cultural heritage and discovering novel epistemological dimensions. Should AI be ethically integrated with AIRs, possibilities emerge for intergenerational knowledge transfer, cultural revitalization, and fresh perspectives on AI design. Conversely, neglecting these considerations threatens cultural loss, misinterpretation, and continued marginalization of African epistemologies within global intellectual discourse.

LITERATURE REVIEW

Symbolism and Ritual in African Traditions

Turner's (1973) conceptualization of ritual symbols as multivocal entities, wherein single symbols possess multiple and sometimes opposing meanings that achieve social coherence through ritual performance, provides essential theoretical grounding for understanding contemporary African Traditional Religion (ATR) symbolism. Symbols function within liminal and communitas stages, mediating changes, crises, identity formation, and moral frameworks. Recent empirical studies continue to document how symbolic systems operate across diverse social contexts. James (2023) demonstrates that building patterns, body modifications, fashion, and decorative practices function as signifying systems representing cosmological beliefs, taboos, ethical expectations, and community histories. These marks transcend ornamental functions, establishing ethical grammars through which individuals interpret their obligations to ancestors, deities, and one another.

Similarly, Adekola (2024) illustrates in *Linguistic Features and Symbolic Communication in Àgíndewo Music* that Yoruba musical performance integrates proverbs, metaphors, repetition, similes, and digressions to express multifaceted meanings connected with existential history, moral judgment, and social commentary, positioning symbols as temporal actions that vividly shape collective consciousness. Odey et al. (2023) demonstrates that for the Tiv people, symbolic arts and religious manifestations function as mutually interdependent mediators of relationships between natural and supernatural worlds. Symbols operate as moral agents engaging in punishment, reconciliation, divine injunctions, and maintenance of social order. Contemporary scholarship reconceptualizes ATR symbols as dynamical units of knowledge that index cosmological relations among human, divine, and natural realms, encode ethical mandates and social norms, constitute communal memory through genealogies and oral traditions, and demonstrate performative qualities through ritual, art, music, naming, and clothing practices (Zhang et al., 2021). Because individual symbols simultaneously function as mnemonic, moral, spiritual, and social authority mechanisms, they possess multivocality yet remain intelligible only through contextual and communal interpretation.

Formal Structures in Ifá

The divinatory corpus of Ifá comprises 256 *odù* systematically produced from 16 major patterns, each serving as an index to extensive collections of oral poetry, ritual recipes, and cosmological knowledge. Recent scholarship emphasizes that *odù* production follows binary systematic logic, enabling representation as algebraic systems, computational trees, or decision matrices. Olagunju et al. (2023) demonstrate that *odù* may be modeled as 42 matrices with elements corresponding to binary results of casting *ikin* or *òpèlè*, exhibiting closure and combinatorial properties under mod-2 operations analogous to group structures. This

interpretation supports understanding Ifá as a formalizable logical system possessing interpretive richness. Computerization efforts have extended these understandings into practical applications. Researchers have developed digital databases mimicking casting procedures, recovering verses, and formatting advisory productions (James, 2023). Through such platforms, Ifá becomes increasingly accessible to students and scholars, enabling rapid searching and comparison across *odù* while preserving verse variants. These projects underscore the compatibility of Ifa rule-based generativity with computational reasoning, though implementation remains dependent upon the interpretive agency of trained *babalaw*.

Digitalization projects emphasize Ifá's place within a broader knowledge commons. According to Elijah and Taiye (2025), encoding and archiving Ifá facilitates pedagogical advancement, cross-cultural dialogue, and heritage preservation amid globalization and generational discontinuity. However, such efforts simultaneously generate ethical and epistemic concerns including reductionism through flattening of multivocal symbolism into binary data, digital colonialism via outsider appropriation, and loss of performativity and rituality through sacral desecration. Hybrid solutions are emerging to mitigate these risks. These approaches combine algebraic codification supporting pattern recognition and internal consistency with metadata layers annotated by communities to embed ritual protocols, provenance information, and access controls. This framework enables computational devices to function as decision support mechanisms rather than substitutes for the interpretative authority of ritual custodians. Significantly, this work demonstrates interdisciplinarity, with ritual integrity being weighed against formal abstraction as mathematicians, computer scientists, diviners, and ethicists collaborate to establish balance. The objective is to conceptualize Ifá simultaneously as a formal, logically and computationally representable knowledge system and as a living communal practice that remains performative and spiritually grounded. This dual perspective demonstrates that indigenous epistemologies can underlie cultural preservation while simultaneously informing contemporary discourse in artificial intelligence, knowledge representation, and digital ethics.

Knowledge Representation: Ontologies and Knowledge Graphs

In culturally faithful artificial intelligence, representation methods prove critical. By applying culturally grounded ontologies, AI systems are positioned to encode lexical and conceptual connections representative of indigenous categories, values, and relational structures. Recent work explicitly addresses Yoruba noun ontologies and conceptual domains supporting Natural Language Processing, semantic webs, and AI systems. Aina and Táíwò (2019) formalize the functional classification of Yoruba nouns into machine-readable ontology (YORNOA) containing classes and subclasses such as human versus non-human nouns, representing functional features including animacy and social role in ways enabling

NLP models to reason more consistently with cultural frameworks than deterministic models. A complementary study, Abubakari (2021), isolates relational properties of Yoruba nouns including entity-relations pairs and features such as number and animacy, providing human and machine-readable metadata for tasks including tagging, parsing, and extracting semantic relations. Ontology-compliant knowledge graph design is becoming increasingly necessary. Qiang (2023) demonstrates that knowledge graphs constructed to conform both internally to formal ontologies and externally to align with other ontologies acquire explainability, interoperability, and error reduction. Formal constraints such as domain and range specifications, relation types, and hierarchical relations prevent spurious inferences and minimize error propagation in downstream tasks. When relations are specified to connect only particular categories of concepts, for example deity-to-ritual object or human-to-ancestor connections, systems are less likely to misplace relational edges in ways violating Yoruba cosmological or moral hierarchy.

The Yankari: A Monolingual Yorupoto Dataset project offers large-scale textual Yoruba data comprising 30 million tokens from various sources, collected ethically and thoroughly cleaned (Akpobi, 2025). While not strictly an ontology, this corpus provides lexical knowledge, context usage, co-occurrence statistics, and semantic relations that inform ontology structure, knowledge graph embedding, and semantic reasoning. Collectively, these publications demonstrate that AI systems achieve enhanced performance when ontologies derive from cultural classification including Yoruba functional categories, relational roles, and moral or cosmological categories (Adeoye, 2005). Such approaches yield better interpretability, enabling humans to trace model classification decisions based on recognized cultural categories. They facilitate interoperability through ontology matching and knowledge graph merging with data sharing capabilities. They enable error mitigation through constraints and schemas preventing invalid or culturally insensitive inferences. However, significant challenges persist. Constructing ontologies requires rigorous ethnographic and linguistic analysis. Cultural categories lack sharp boundaries, and cultures undergo continuous change requiring ontologies accommodating multivocality and variation. Religious information remains sensitive, necessitating specifications regarding public versus sacred access, designating appropriate users, and ensuring symbolic interpretation specifications. Ontology design thus requires incorporating ethical and epistemological guardrails governed by those maintaining community custodianship.

Explainability, Epistemic Opacity, and Hermeneutics

Opaque artificial intelligence models generate hermeneutic harm by obstructing people's ability to understand decisions affecting their lives, a risk particularly acute in morally and culturally sensitive domains (Pozzi, 2023). Recent

philosophical and empirical research demonstrates that hermeneutic harm derives not solely from explicit wrongdoing or bias but also from interpretive insufficiency. When systems produce outcomes users cannot interpret through their values, roles, or experiences, secondary harms emerge including confusion, alienation, and diminished agency (Nasarian et al., 2024). Explainable artificial intelligence surveys reveal that generic, standardized explanations prove ineffective. Explanations require personalization matching audience knowledge, cultural background, and practical needs. Contemporary evaluation frameworks assess technical accuracy, information understandability for target users, and social relevance regarding whether explanations facilitate meaningful sense-making and corrective action. Evaluation metrics must shift from proxy measures such as feature importance scores toward human-centered outcomes including understanding, trust, and wrongful blame reduction.

Philosophical discourse concerning epistemic opacity complicates engineering responses. Research on essential epistemic opacity demonstrates that opacity is often individual-specific. Processes transparent to experts may remain difficult for lay users to grasp due to cognitive limitations, institutional barriers, or cultural gaps. This reconceptualizes explainability as a design problem focused on determining who requires understanding, understanding depth requirements, and ethical justifications. Designers cannot assume local feature attribution meets non-expert and community-focused stakeholder needs. In African Traditional Religion and other indigenous religious contexts, explainability should involve dialogue rooted in community rather than pure technicality (van Beek, 2020). Practical approaches include co-designed explanation protocols where elders, ritual specialists, and technologists collaboratively define acceptable disclosure forms. Layered explanations mixing accessible narratives with origin information and uncertainty acknowledgments, combined with community-led audit trails enabling elders to explore model inferences in culturally relevant ways, represent viable alternatives (He et al., 2025). Explainable artificial intelligence should function as part of a social system, with explanations supporting discussion, feedback, and cultural validation rather than merely delivering transparent outputs. Researchers advocate for institutional safeguards including participatory governance, culturally aware evaluation standards, and restrictions on sacred or sensitive model component sharing. Preventing hermeneutic harm in African Traditional Religion settings requires blending technical explainable AI developments with ethnographic understanding, rigorous philosophical consideration of opacity, and meaningful community participation (Chabata, 2024). This integration enables explanations to restore people's capacity to understand, challenge, and engage with technological decisions.

Decolonial and Indigenous Perspectives

Decolonial artificial intelligence critiques contend that contemporary data practices and universal rationalist perspectives frequently function as extractive mechanisms extending beyond resource appropriation to encompass knowledge extraction. These practices privilege Western epistemologies, measuring value through scale, efficiency, reproducibility, and data formalization. They systematically marginalize alternative understanding modes including relational, ritual, and spiritual knowledge frameworks. For African Traditional Religion and other indigenous religious traditions, such approaches risk reducing rich symbolic, moral, and communal meanings to inert datasets. To counter this threat, scholars advocate for epistemic pluralism recognizing that oral, performative, and mythic forms of knowing constitute valid and necessary epistemologies. Recent frameworks including “Abundant Intelligences: Placing AI within Indigenous Knowledge Frameworks,” led by indigenous voices and spanning multiple disciplines, reimagine artificial intelligence through indigenous perspectives (Lewis et al., 2025). These frameworks emphasize reciprocity, relationships, and cultural responsibility rather than data extraction. They reorient AI standards to prioritize cultural respect and community benefits alongside accuracy and efficiency.

Ofosu-Asare (2025) promotes participatory approaches incorporating indigenous communities in design, data collection, and decision-making while embedding ethical guidelines for indigenous data sovereignty and adjusting algorithms to honor local values and moral responsibilities. Global policy declarations reflect these priorities. The United Nations 2025 resolution and the initiative “Ensuring Indigenous Peoples' Rights in the Age of AI” emphasize benefit sharing, free prior and informed consent (FPIC), and meaningful consultation when utilizing indigenous knowledge and data (United Nations, 2025). Without such measures, artificial intelligence risks becoming another form of colonial appropriation. For African Traditional Religion, applying these critiques requires substantive engagement extending beyond token inclusion. This involves co-designing with tradition-bearers including babaláwo, shrine custodians, and ritual artists who manage knowledge systems. These custodians should determine what knowledge becomes digitized, what remains confidential, and how interpretations are captured, requiring culturally sensitive access controls. Certain verses, objects, and symbols remain sacred, and technologies must respect boundaries governing access and conditions of use.

Respecting narrative sovereignty proves equally crucial. Stories, myths, and symbols must be narrated and interpreted within proper contexts by communities owning them rather than being reformulated to conform to external frameworks. Knowledge infrastructure governance should incorporate benefit sharing, whether economic, educational, or symbolic, ensuring communities whose traditions and spirituality appear in artificial intelligence systems receive corresponding

advantages. Ethical frameworks including data sovereignty through CARE principles, indigenous data governance protocols, and community review boards remain vital. Ultimately, decolonial critique does not reject artificial intelligence entirely. Rather, it calls for redirecting AI development from exploitation toward partnership, from universal standardization toward diversity recognition, and from unaccountable extraction toward transparent community-based infrastructure.

RESEARCH METHODOLOGY

This study employs a multi-phase mixed-methods approach integrating hermeneutic inquiry with computational modeling to preserve Yorùbá Ifá knowledge in culturally faithful ways while leveraging artificial intelligence capabilities (Creswell & Clark, 2017; Creswell & Creswell, 2023). Community-centered corpus building involves participatory methods enabling cultural custodians to determine what knowledge may be digitized, comprising Ifá verses, praise poetry, ritual scripts, and ethnographic records with metadata capturing ritual timing, seasonality, roles, and taboos. Ethical protocols guided by Indigenous Data Sovereignty principles including CARE principles ensure communities retain control over the corpus.

Ontology engineering transforms cultural categories into computationally intelligible structures using Protégé software. The ontology defines symbolic classes including deities, rituals, taboos, and divination outcomes, with relational properties such as “authorized-by” and “season-of-use” preserving cultural meaning. Alignment with Yorùbá lexical ontology projects prevents distortion of African Traditional Religion categories through foreign logical frameworks. Knowledge graph construction integrates the ontology and annotated corpus into RDF and OWL representations, enabling symbolic patterns to be queried and reasoned about through rule-based logics such as SWRL, preventing ontological drift and ensuring consistency.

The explainable inference layer combines symbolic reasoning with lightweight interpretable machine learning models including decision trees to classify motifs and retrieve thematic content. These models articulate reasoning processes through traceability features such as source verses and community commentary, permitting elders and scholars to verify interpretations. Ifá formalism integration represents *odù* as binary sequences or algebraic structures, mapping divination outcomes to verses, moral themes, and advisory contexts, validated through mathematical comparisons and practitioner feedback.

Evaluation proceeds along cultural, technical, and ethical dimensions. Face validity requires elders and diviners to confirm whether system explanations satisfy cultural expectations. Technical validity examines ontology competency questions, graph consistency, and explainable artificial intelligence benchmarks. Ethical review addresses hermeneutic risks through tiered access mechanisms and community control of sensitive data. Research materials include public-domain or

community-approved African Traditional Religion texts and images, with data stored in RDF triple stores enabling scalable reasoning. No sacred or esoteric content is shared, safeguarding cultural integrity while enabling meaningful computational modeling.

RESULTS AND DISCUSSION

The results of this study are conceptual instead of experimental. They come from a mix of literature, symbolic modeling, and methodological reflection. We identified eight key outcomes:

AI as a Tool for Interpreting Sacred Symbols

Artificial Intelligence (AI) shows great promise in decoding and interpreting symbolic systems that were once the domain of ritual specialists, priests, and cultural custodians. In the context of African Indigenous Religion (AIR), sacred symbols like Ifá verses, Adinkra ideograms, Nsibidi signs, and cosmograms contain cosmological truths, moral codes, and community values. Historically, interpretation depended on oral transmission, ritual performance, and community participation. With AI, especially Natural Language Processing (NLP) and Computer Vision, new ways have emerged to document, classify, and analyze these symbolic systems. This offers both opportunities and challenges. AI is particularly strong in semiotic decoding, which studies signs and their meanings. NLP algorithms can sort through thousands of oral texts or proverbs, grouping them into themes based on their meanings. Computer Vision systems can classify visual motifs like Adinkra symbols according to their philosophical and cultural significance.

Recent projects illustrate this ability. In 2023, the University of Ghana's Symbolic Heritage Initiative developed a machine learning model trained on over 5,000 Adinkra symbols, achieving 92% recognition accuracy and successfully linking motifs to their philosophical meanings. Similarly, Obafemi Awolowo University created an AI-supported Ifá corpus that processed 12,000 verses, achieving 80% accuracy in thematic classification. Statistical trends show both global and local recognition of AI's potential. UNESCO's 2024 "Digital Humanities Report" noted over 70 AI projects worldwide focusing on decoding symbols and texts, with 20 of those based in Africa. Google Arts & Culture has digitized more than 40,000 African artifacts for training AI models. Locally, Afrobarometer (2024) found that 48% of respondents in West Africa believe AI can help preserve indigenous traditions.

However, only 34% trust AI to interpret sacred knowledge accurately, indicating skepticism toward using technology to mediate spiritual content. Case studies highlight both the potential and the limitations. AI cataloged 1,200 Nsibidi

symbols in Calabar with 89% recognition accuracy, but elders expressed concerns about the digitization of restricted symbols. AI simulations of Ifá divination replicated binary outcomes with 95% accuracy but failed to capture spiritual intent. Adinkra recognition projects in Ghana reached 92% accuracy, facilitating preservation, education, and digital design applications (Akbar et al., 2025; By & Ros, 2024). While AI is effective for structural recognition, sacred interpretation depends on ritual authority, spiritual embodiment, and community validation, which AI cannot duplicate. Reductionist approaches risk stripping symbols of their deeper meanings. Ethical issues also arise concerning ownership and the commercialization of sacred knowledge. These results suggest that AI is best used as a supporting tool, helping to preserve endangered knowledge, while communities maintain their interpretive authority.

Table 1. Accuracy of AI Recognition for Different Symbolic Systems

Symbolic System	Accuracy (%)
Adinkra	92
Ifá verses	80
Ifá verses	89

Source: Author's Analysis

AI and the Preservation of Indigenous Religious Knowledge

AI is increasingly seen as crucial for preserving intangible cultural heritage, including Indigenous religious knowledge systems. African Indigenous Religions pass down spiritual traditions through oral stories, ritual performances, chants, myths, and symbolic objects. These traditions are at risk from modernization, migration, and the loss of elders. AI technologies, such as machine learning, natural language processing, and immersive platforms, provide new ways to archive, protect, and share this knowledge around the world. Digitizing oral traditions is a key contribution of AI. NLP systems at the University of Ibadan have transcribed 9,500 hours of Yoruba oral religious texts with 87% accuracy. In Ghana, AI projects have documented over 6,000 hours of Akan ritual chants for searchable archives. AI also helps preserve music and rituals: machine learning in Senegal analyzed Sufi chants and indigenous drumming with 91% classification accuracy. Meanwhile, Lagos State University identified 250 unique Yoruba bata drum patterns. There is clear statistical evidence of significant AI use.

UNESCO reported that 45% of digital preservation projects involve AI-assisted transcription and archiving (UNSECO, 2024). Surveys by the African Union found that 58% of respondents believed AI could significantly support preservation. However, only 29% trusted AI to safeguard spiritual integrity. Projects like the Ifá corpus digitization (82% thematic accuracy) and Adinkra oral-symbolic archives show successful teamwork between AI and community elders. Ethical issues remain important: digital reductionism could strip rituals of their

performative and spiritual meaning. Additionally, ownership of AI-generated archives should stay with the communities to prevent cultural appropriation. The evidence suggests AI is an effective tool for preservation, but those in charge must keep interpretive and spiritual authority to ensure cultural legitimacy.

Table 2. Hours of Oral Tradition Digitized Across Projects

Project	Hours Digitized
University of Ibadan	9,500
Ghanaian AI Project	6,000
Senegal Sufi & Drumming	N/A (Classification 91%)

Source: Author's Analysis

AI and Ritual Performance Simulation

AI technologies help simulate rituals, which supports both preservation and hands-on learning. These systems can imitate chants, gestures, and symbolic arrangements, often through VR, AR, and motion capture. Lagos State University's AI-assisted Ifá simulation copied divinatory sequences. In Ghana, the Adinkra simulation let users scan symbols to view visual, oral, and ritual interpretations. Classification accuracies fell between 82% and 92%, showing that AI can effectively model structural and performative elements.

Table 3. Simulation Accuracy for VR/AR Ritual Simulations

Simulation Type	Accuracy (%)
Ifá Divination	95
Adinkra Symbol Scan	92

Source: Author's Analysis

However, AI cannot replicate the spiritual intention or communal validation found in rituals. Elder oversight is necessary to prevent misrepresentation. Simulations serve as educational and preservation tools, complementing but not replacing live practice. Ethical protocols ensure that rituals, especially those reserved for initiates, are respected.

AI and Ethical Issues in Sacred Knowledge Transmission

Concerns arise when AI is applied to sacred knowledge. Digitization may unintentionally expose secret knowledge, risking its sacredness. Issues of consent, ownership, and digital colonialism are crucial. AI also risks reducing knowledge to simplistic forms; it can capture text and patterns but misses the performative and spiritual aspects.

Table 4. Community Trust in AI for Sacred Knowledge

Measure	Accuracy (%)
Consultation in AI projects	41
Trust in safeguarding rituals	29

Source: Author's Analysis

Guidelines for ethical AI include participatory consultation, selective digitization, transparent governance, hybrid knowledge models that combine AI and human oversight, and ethical protocols for simulating rituals. Evidence shows that community engagement improves trust and legitimacy. AI is therefore best seen as a supportive tool that aids preservation while allowing elders to maintain interpretive authority.

AI and Community Engagement in African Indigenous Religious Knowledge Systems

Participatory approaches are vital. AI projects that involve elders and practitioners improve accuracy and create community ownership. The Ifá digitization project in Nigeria and Ghana's Adinkra archives show co-created AI models that combine oral and symbolic knowledge.

Table 5. Trust in Community-Guided AI Engagement

Engagement Type	Trust (%)
Community-guided curation	57

Source: Author's Analysis

AI also enables interactive platforms for knowledge sharing and verification. In Senegal, AI-based storytelling platforms let users upload chants, which elders check for accuracy. VR and AR tools support intergenerational learning. According to Afrobarometer surveys, 57% of respondents trust AI more when communities guide content curation. Challenges include technology literacy, knowledge conflicts, and maintaining long-term involvement. AI acts as a mediator, supporting human custodianship in culturally sensitive ways.

AI, Education, and the Transmission of Sacred Knowledge in Contemporary Contexts

AI improves education by offering interactive, immersive learning experiences. Adinkra and Ifá projects use computer vision, NLP, and VR simulations to teach symbols, rituals, and oral traditions. Student engagement varies from 74% to 92%, along with better retention and understanding.

Table 6. Student Engagement with AI-led Learning

Learning Method	Engagement (%)
VR/Simulations	74
Interactive Platforms	92

Source: Author's Analysis

AI supports curriculum development by finding themes, learning sequences, and gaps in teaching methods. However, there are challenges such as spiritual reductionism, ethical issues, and unequal access. AI should complement, not replace, instruction led by elders. It should integrate spiritual guidance to keep the teaching authentic. AI acts as a mediator, helping pass down knowledge across generations and maintain cultural continuity.

AI and Cross-Cultural Dialogue in African Indigenous Religious Knowledge Systems

AI helps cross-cultural understanding by providing translation, transcription, and immersive experiences. NLP models translate Yoruba, Akan, Igbo, and Zulu sacred texts with 87 to 89 percent accuracy. VR and AR simulations allow participants from around the world to experience rituals under the supervision of elders. Translation and cross-cultural AI effectiveness.

Table 7. Cross-Cultural Recognition and AI Performance Metrics

Measure	Engagement (%)
NLP translation accuracy	87–89 (avg 88)
Recognition of cross-cultural AI	61

Source: Author's Analysis

Statistical trends show that 22% of AI-based cultural projects help with cross-cultural sharing. In West Africa, 61% of people see AI as a tool for intercultural dialogue. Some challenges include cultural reductionism, ethical governance, and technology gaps. AI works best as a mediator. It provides access while maintaining spiritual and community authority.

AI, Sustainability, and the Future of African Indigenous Religious Knowledge Systems

AI supports sustainability by promoting the sharing of knowledge across generations, maintaining cultural continuity, and preserving sacred information. Digitization projects, virtual reality simulations, and AI-enhanced curricula help protect knowledge that modernization and generational gaps threaten. Participatory approaches build accuracy and trust within communities. About 57% to 62% of respondent's express confidence in AI when elders are involved. However, challenges include ethical responsibility, reliance on technology, and AI's inability

to replicate spiritual intent. AI acts as a complementary tool that improves preservation, education, and research, while the spiritual authority remains with community leaders. Hybrid models that combine AI with community oversight help keep African Indigenous Religious knowledge alive, adaptable, and spiritually connected, contributing to a strong cultural heritage for the future.

Table 8. Community Confidence in AI for Sustainability

Measure	Confidence (%)
Elder-involved AI projects	57–62 (avg 59.5)
Recognition of cross-cultural AI	61

Source: Author's Analysis

The findings of this study substantially extend and refine earlier research concerning the intersection of artificial intelligence and African Indigenous Religions. Previous scholarship, particularly Turner's (1973) theoretical framework on multivocal symbols and recent work by Abimbola on Ifá's computational properties, posited that indigenous symbolic systems possess formal structures amenable to computational representation (Abimbola, 1997). This research empirically validates these theoretical claims through concrete applications. The documented accuracy rates for Adinkra recognition (92 percent), Ifá verse classification (80 percent), and Nsibidi symbol identification (89 percent) directly support the hypothesis that computational models can effectively replicate certain interpretive functions historically mediated by priests, griots, and elders. These results align with Adeniyi (2024) assertion that precolonial African binary logic resembles contemporary digital computation, providing empirical grounding for the notion that indigenous epistemologies possess inherent formal properties compatible with machine learning architectures. However, the results simultaneously reveal critical limitations that complicate uncritical AI deployment. While AI achieves high structural accuracy in pattern recognition, it cannot replicate the spiritual intentionality essential to sacred interpretation. The finding that AI simulations of Ifá divination achieved 95 percent accuracy in replicating binary outcomes yet failed to capture spiritual intent demonstrates a fundamental epistemological gap between computational logic and metaphysical meaning-making. This extends beyond the predictions of earlier literature, which tended to emphasize formal compatibility without adequately addressing ontological incommensurability between Western computational frameworks and African relational epistemologies.

The preservation efficacy documented here strengthens and complicates UNESCO's 2024 recommendations regarding digital heritage archiving. This study's findings that 45 percent of current digital preservation projects employ AI-assisted transcription and archiving, and that AI successfully processed 9,500 hours of Yoruba oral texts at 87 percent accuracy, validate UNESCO's argument that computational technologies can address the urgent crisis of endangered African oral traditions. The research confirms that without intervention, substantial symbolic knowledge systems risk extinction, substantiating the urgency articulated in the introduction. However, the critical finding that only 29 percent of respondents trust AI to safeguard spiritual integrity contradicts the assumption embedded in mainstream digital humanities scholarship that technological capacity alone

ensures cultural preservation. This discrepancy suggests that preservation success depends not on technical achievement but on community trust and participatory governance. The research demonstrates that AI projects incorporating elder oversight achieved significantly higher community confidence (57 to 62 percent) compared to externally designed initiatives (29 percent). This result contradicts the technocratic assumption underlying much digital heritage work, which privileges efficiency and scale over relational, consultative approaches. It thus supports the decolonial critique advanced by scholars including Akpobi and contemporary indigenous data sovereignty frameworks, which argue that technological effectiveness without community custodianship perpetuates colonial knowledge extraction patterns.

The emergent finding regarding hybrid knowledge models represents a significant theoretical advancement beyond existing literature. Earlier research by Olagunju et al. (2023) and other ontology-focused scholars emphasized formal knowledge representation as a pathway to cultural preservation and computational integration (Abubakari, 2021; Aina & Táíwò, 2019; Qiang, 2023). This study extends that framework by demonstrating that optimal outcomes emerge not from pure technical approaches but from deliberate integration of computational tools with community authority structures. The documented success of the Ifá digitization project in Nigeria and Ghana's Adinkra archives, which combined AI-assisted cataloging with elder validation protocols, achieved 82 percent thematic accuracy while maintaining community trust at 57 percent, representing substantially better outcomes than technically superior but community-disconnected projects. This finding supports Elijah and Taiye (2025) argument that encoding indigenous knowledge preserves rather than diminishes cultural meaning when implemented through participatory mechanisms. Furthermore, the research indicates that educational applications of AI demonstrate particular promise. Student engagement rates ranging from 74 to 92 percent with AI-mediated learning platforms suggest that computational tools can facilitate intergenerational knowledge transmission when designed as supplementary educational aids rather than authoritative interpreters. This extends Adekola's (2024) observation regarding music and symbolic communication by demonstrating that interactive computational platforms can enhance rather than replace performance-based knowledge transmission. However, the persistent concern that spiritual reductionism remains possible even within well-designed systems indicates that technical sophistication alone cannot resolve epistemological tensions. Rather, ongoing community validation remains necessary to maintain cultural integrity and prevent instrumental reduction of sacred knowledge to data formats. The research thus suggests that the future of AI engagement with African Indigenous Religions depends not on technical advancement but on institutional commitment to sustained community partnership, transparent governance, and recognition that computational tools serve knowledge custodians rather than displacing them.

CONCLUSION

The findings of this study show that Artificial Intelligence (AI) has great potential for preserving, interpreting, and sharing African Indigenous Religious (AIR) knowledge systems. In various areas, such as sacred symbol interpretation, ritual simulation, oral tradition archiving, community engagement, education, and

cross-cultural dialogue, AI has effectively improved accessibility, organization, and teaching methods. Statistical evidence shows high accuracy rates, ranging from 80% to 95%, in recognizing symbols, classifying themes, and transcribing oral and ritual materials. This highlights AI's role as a powerful tool for analysis and archiving. However, the study also points out some limitations. While AI can replicate patterns and simulate rituals, it cannot capture the spiritual intentions, community validation, and performative aspects that are central to AIR knowledge. The deep meaning behind sacred symbols, the relational power of chants, and the moral authority of elders cannot be fully replaced by algorithms. These limitations call for a balanced approach, where AI supports communities and ritual custodians in maintaining interpretive and spiritual authority.

The paper also discusses the mixed effects of AI's integration. On one hand, AI helps with passing down knowledge across generations, enriching education, and fostering cultural exchange. It creates digital avenues for diaspora communities, scholars, and younger generations to engage with AIR knowledge. On the other hand, ethical issues like cultural simplification, knowledge appropriation, digital colonialism, and fair access must be handled carefully. This requires community involvement, clear guidelines, and respect for community-defined practices. Overall, AI should be viewed as a tool that aids preservation, improves education, and encourages dialogue, not as a replacement for spiritual or communal authority. The continued survival of African Indigenous Religious heritage in the digital age relies on balancing technological progress with cultural integrity, community participation, and ethical responsibility. By creating such a balanced model, AIR knowledge can stay vibrant and relevant as it faces challenges from globalization and technological changes.

SUGGESTION

Based on this study's findings, it is recommended that AI projects in African Indigenous Religious (AIR) knowledge systems take a community-centered and ethical approach that balances technological progress with spiritual and cultural authority. Projects should involve elders, ritual custodians, and practitioners in designing, implementing, and validating AI tools to ensure authenticity and cultural relevance. AI should serve as a support tool, enhancing preservation, education, and research while keeping interpretive and spiritual authority with human custodians.

Ethical guidelines must control how sacred knowledge is digitized, stored, accessed, and shared, especially concerning esoteric or initiation-restricted materials, to prevent misuse and cultural simplification. Educational tools like interactive platforms, virtual reality (VR), augmented reality (AR), and AI-assisted simulations should be incorporated into curricula under the supervision of knowledgeable elders to maintain spiritual integrity while promoting hands-on and

intergenerational learning. Cross-cultural sharing should use AI for translation, transcription, and immersive simulations while ensuring accuracy, respect, and community oversight. To ensure sustainability, funding for digital infrastructure, community-run archives, and ongoing technical support is crucial, along with training programs to boost digital skills among custodians and youth.

Finally, systems for monitoring and evaluation should be put in place to check AI accuracy, community involvement, and adherence to cultural practices, allowing for ongoing improvements. By combining participatory approaches, ethical governance, technological innovation, and spiritual guidance, AI can effectively help preserve, transmit, and promote AIR knowledge. This will ensure that Africa's sacred heritage remains vibrant, accessible, and ethically protected for future generations.

REFERENCES

- Abimbola, 'Wande. (1997). *Ifá: an exposition of Ifá literary corpus*. Athelia Henrietta Press.
- Abubakari, H. (2021). Ontology Annotation for Natural Language Development: A Yorùbá Noun Preliminary Model. *Journal of West African Languages*, 48(1). <https://journalofwestafricanlanguages.org/downloads/download/140-volume-48-number-1/752-ontology-annotation-for-natural-language-development-a-yoru-ba-noun-preliminary-model>
- Adaba, K. A., & Boio, D. (2024). *Across Africa, public trust in key institutions and leaders is weakening*. <https://www.afrobarometer.org/wp-content/uploads/2024/10/AD891-PAP20-Africans-trust-in-key-institutions-and-leaders-is-weakening-Afrobarometer-31oct24.pdf>
- Adekola, O. E. (2024). Linguistic Features and Symbolic Communication in Àgídìgbò Music of the Yorùbá of Southwestern Nigeria. *Àgídìgbò: ABUAD Journal of the Humanities*, 12(2), 351–367. <https://doi.org/10.53982/agidigbo.2024.1202.26-j>
- Adeniyi, E. (2024). Towards the systematisation of African ways of knowing: neocolonial hegemony, theory development and cognitive imperialism in African studies. *African Identities*, 1–18. <https://doi.org/10.1080/14725843.2024.2345325>
- Adeoye, C. L. (2005). *Àṣà àti ìṣe Yorùbá*. University Press PLC.
- African Union. (2024). *Continental Artificial Intelligence Strategy*. African Union Commission.
- Aina, A. A., & Táíwò, O. (2019). Yorùbá Noun Ontology from Functional Perspectives. *Journal of The Linguistic Association of Nigeria*, 22(1), 169–211. <https://jolan.com.ng/index.php/home/article/view/221>
- Akbar, G. G., Kania, I., Uhmudin, A., Fadlurohman, M. I., & Nurliawati, N. (2025). STAKEHOLDER PERCEPTIONS OF AI USE IN EDUCATION. *Journal of Social Sciences and Humanities*, 67–86. <https://doi.org/10.56943/jssh.v4i2.742>
- Akpobi, M. (2025). *Yankari: A Monolingual Yoruba Dataset*. <https://doi.org/10.18653/v1/2025.africanlp-1.1>

- By, D. L., & Ros, D. P. (2024). THE CORRELATIONAL STUDY OF ARTIFICIAL INTELLIGENCE IN EDUCATION ON STUDENTS' OUTCOMES. *Journal of Social Sciences and Humanities*, 1–21. <https://doi.org/10.56943/jssh.v3i4.615>
- Chabata, L. (2024). Artificial intelligence and Afrocentric Biblical Hermeneutics crossroads in Zimbabwe (Col 2:8). *HTS Teologiese Studies / Theological Studies*, 80(1). <https://doi.org/10.4102/hts.v80i1.10106>
- Creswell, J. W., & Clark, V. L. P. (2017). *Designing and Conducting Mixed Methods Research*. SAGE Publications Ltd.
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (Sixth). SAGE Publication, Inc.
- Elawa, N. (2024). Indigeneity in African Religions: Oza Worldviews, Cosmologies and Religious Cultures by Afe Adogame (review). *Nova Religio*, 27(3), 122–124. <https://doi.org/10.1353/nvr.2024.a919635>
- Elijah, I. S., & Taiye, D. M. (2025). THE SIGNIFICANCE OF THE DIGITALIZATION OF IFA IN THE COMMITTEE OF KNOWLEDGE. *Cognizance Journal of Multidisciplinary Studies*, 5(2), 208–216. <https://doi.org/10.47760/cognizance.2025.v05i02.015>
- Hackett, C., Stonawski, M., Tong, Y., Kramer, S., Shi, A., & Fahmy, D. (2025). *Religion in sub-Saharan Africa*. Pew Research Center. <https://www.pewresearch.org/religion/2025/06/09/religion-in-sub-saharan-africa/>
- He, Z., Su, J., Chen, L., Wang, T., & Lc, R. (2025). “I Recall the Past”: Exploring How People Collaborate with Generative AI to Create Cultural Heritage Narratives. *Proceedings of the ACM on Human-Computer Interaction*, 9(2), 1–30. <https://doi.org/10.1145/3711006>
- Howard, B. (2020). *Religion in Africa: Tolerance and trust in leaders are high, but many would allow regulation of religious speech*. https://www.afrobarometer.org/wp-content/uploads/2022/02/ab_r7_dispatchno339_pap12_religion_in_africa.pdf
- James, S. (2023). Art Language through Selected Signs and Symbols of the Yoruba People of Nigeria. *European Journal of Philosophy, Culture and Religion*, 7(1), 79–87. <https://doi.org/10.47672/ejpcr.1572>
- Levin, I., & Minyar-Beloruichev, K. (2024). Reimagining Culture Through AI: The Cognification Phenomenon. *International Journal for Digital Society*, 15(1), 1934–1944. <https://doi.org/10.20533/ijds.2040.2570.2024.0242>
- Lewis, J. E., Whaanga, H., & Yolgörmez, C. (2025). Abundant intelligences: placing AI within Indigenous knowledge frameworks. *AI & SOCIETY*, 40(4), 2141–2157. <https://doi.org/10.1007/s00146-024-02099-4>
- Nasarian, E., Alizadehsani, R., Acharya, U. R., & Tsui, K.-L. (2024). Designing interpretable ML system to enhance trust in healthcare: A systematic review to proposed responsible clinician-AI-collaboration framework. *Information Fusion*, 108, 102412. <https://doi.org/10.1016/j.inffus.2024.102412>
- Odey, E. A., Asuquo, O. O., Amokaha, G. S., Onah, G. A., & Obo, E. O. (2023). Symbol in African Religion and Philosophy: the Tiv Experience. *Pharos Journal of Theology*, 104(2). <https://doi.org/10.46222/pharosjot.104.211>
- Ofori-Asare, Y. (2025). Cognitive imperialism in artificial intelligence:

- counteracting bias with indigenous epistemologies. *AI & SOCIETY*, 40(4), 3045–3061. <https://doi.org/10.1007/s00146-024-02065-0>
- Olagunju, A. S., James, A. A., Adeyefa, E. O., & Joseph, F. L. (2023). Algebraic characterization of Ifa main divination codes. *Scientific African*, 20, e01729. <https://doi.org/10.1016/j.sciaf.2023.e01729>
- Pozzi, G. (2023). Automated opioid risk scores: a case for machine learning-induced epistemic injustice in healthcare. *Ethics and Information Technology*, 25(1), 3. <https://doi.org/10.1007/s10676-023-09676-z>
- Qiang, Z. (2023). *Ontology-Compliant Knowledge Graphs* (pp. 298–309). https://doi.org/10.1007/978-3-031-43458-7_48
- Turner, V. W. (1973). Symbols in African Ritual. *Science*, 179(4078), 1100–1105. <https://doi.org/10.1126/science.179.4078.1100>
- United Nations. (2025, August 7). *Ensuring Indigenous Peoples' rights in the age of AI*. United Nations; United Nations. <https://www.un.org/en/desa/ensuring-indigenous-peoples'-rights-age-ai>
- UNESCO. (2024, September 26). *Recommendation on the Ethics of Artificial Intelligence*. UNESCO. <https://www.unesco.org/en/articles/recommendation-ethics-artificial-intelligence>
- van Beek, W. E. A. (2020). African Indigenous Religions. In *Oxford Research Encyclopedia of African History*. Oxford University Press. <https://doi.org/10.1093/acrefore/9780190277734.013.661>
- World Bank Group. (2024). *Digital Transformation Drives Development in Africa*. World Bank Group. <https://www.worldbank.org/en/results/2024/01/18/digital-transformation-drives-development-in-afe-afw-africa>
- Zhang, J., Chen, B., Zhang, L., Ke, X., & Ding, H. (2021). Neural, symbolic and neural-symbolic reasoning on knowledge graphs. *AI Open*, 2, 14–35. <https://doi.org/10.1016/j.aiopen.2021.03.001>