


Chapter 10

Artificial Intelligence Applications in Mining Heritage Tourism: Catalyst for Heritage Preservation, Peacebuilding, and Economic Recovery in Conflict

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ABSTRACT

This paper examines the potential of artificial intelligence (AI) in revitalizing mining heritage tourism in conflict-affected regions. While heritage tourism advances cultural preservation and local development, mining landscapes in fragile zones remain overlooked as spaces for memory, peacebuilding, and recovery. Drawing from digital ethics, post-conflict regeneration, and sustainable tourism, the study explores how AI tools—like AR/VR, NLP, predictive analytics, and remote sensing—can support inclusive narratives, site management, and community-driven renewal. Ethical risks such as data sovereignty, bias, and exclusion are critically addressed. A modular “AI Toolkit” is proposed, grounded in the FAIR+Care framework, with policy guidelines for equitable and culturally sensitive deployment. The study advocates for a global observatory to monitor AI’s role in heritage resilience and post-conflict development.

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1 INTRODUCTION

Technological change and geopolitical tensions increasingly shape the global cultural heritage landscape (Kyryliuk, 2024; Chukwuma, 2024; Wiktor-Mach, 2019). As of April 2024, there are more than 120 ongoing active state and non-state armed conflicts worldwide, according to data from the International Committee of the Red Cross (ICRC). They have caused irreparable harm to industrial landscapes, such as mining grounds, which have been abandoned, militarized, or politicized for decades (Bridge, 2004). These places—historically associated with extraction, displacement, and marginalization—can be reconfigured in post-conflict environments as spaces for collective memory, community-led regeneration, and reconciliation (King, 2025; Nag & Rathore, 2025a, 2025b; Nag & Mishra, 2024c, 2024d; Nag, 2024). Such potential, however, is not fully realized in mainstream international peacebuilding and heritage development agendas, particularly their capacity to reconcile contested histories and facilitate social healing (Jones, 2025; Parent, 2011).

Concurrently, cultural heritage tourism is growing at a fast pace all over the world, supported by increased demand for genuine cultural experiences, digital technology in AR/VR, and more government investment in preservation efforts (Labadi et al., 2021; Ursache, 2015; Nothhaft, 2017). The heritage tourism market was valued at between USD 455 billion and USD 661.8 billion in 2023 and was projected to range between USD 778 billion and USD 1.418 trillion by 2030. Social media-induced travel practices and greater appreciation of cultural heritage's value have transformed heritage tourism into a mainstream vehicle for economic development and learning (Habte, 2023).

Despite this action, mining heritage tourism (MHT) remains on the margins of both cultural tourism debates and post-conflict reconstruction initiatives (refer to Table 4 in Annexure). Mining landscapes are generally viewed narrowly as the space of industrial failure or environmental degradation (Lei, Pan & Lin, 2016). However, in war zones, they offer special potential as the site of intergenerational storytelling, cultural resilience, and local economic revival (Wu & Yuan, 2023). Harvesting this potential means novel modes of interaction, interpretation, and access, particularly where institutional trust, human capital, and physical infrastructure are lacking or weak.

1.1 Mining Heritage in Contemporary Conflicts

Recent and current conflicts have placed mining heritage places in the intersection of political, economic, and cultural contestation (Nag & Mishra, 2024c). For example, the cobalt mines of the Democratic Republic of the Congo have gotten seriously involved in violence and exploitation and have surpassed their history and cultural

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