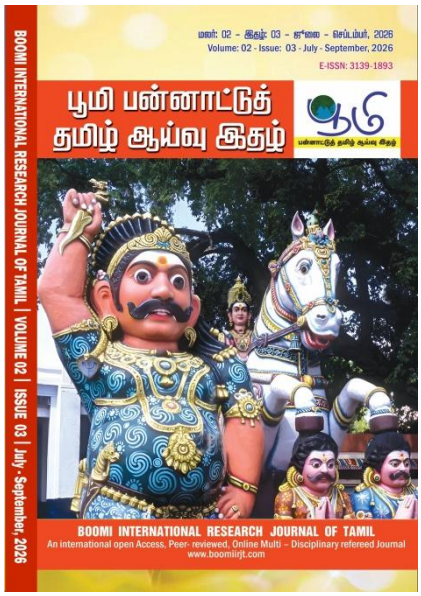
The Role of Artificial Intelligence in the Preservation of Tamil Palm-Leaf Manuscripts: A Digital Humanities Perspective

தமிழ் ஓலைச்சுவடிகளின் பாதுகாப்பில் செயற்கை நுண்ணறிவின் பங்கு: Digital Humanities நோக்கிலான ஓர் ஆய்வு



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முனைவர் அ. இராஜலட்சுமி
உதவிப்பேராசிரியர் & தலைவர், தமிழ்த்துறை (சுயநிதிப்பிரிவு), கொங்குநாடு கலை அறிவியல் கல்லூரி (தன்னாட்சி), கோவை-29,

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Abstract

Tamil palm-leaf manuscripts are important primary sources that preserve the ancient knowledge, literature, medicine, religion, philosophy, astronomy, agriculture, and cultural traditions of the Tamil people. Many of these manuscripts are currently facing the risk of deterioration due to climate change, humidity, insect infestation, fungal growth, physical damage, breakage of palm leaves, fading of inscriptions, and inadequate preservation practices. In this context, it is essential not only to preserve palm-leaf manuscripts through physical conservation methods but also to digitize them and transform them into accessible and research-oriented digital resources. Emerging technologies such as Artificial Intelligence (AI), Computer Vision, Optical Character Recognition (OCR), Handwritten Text Recognition (HTR), Image Restoration, and Natural Language Processing (NLP) provide new possibilities for the digital preservation of palm-leaf manuscripts. In particular, recent studies on character segmentation and recognition in ancient Tamil palm-leaf manuscripts demonstrate the potential of AI-based technologies for identifying and processing historical Tamil scripts.

This study examines the applications of Artificial Intelligence in the digital preservation of Tamil palm-leaf manuscripts and proposes an integrated research framework: Palm-Leaf Manuscript → Digital Image → AI-Based Recognition → Expert Validation → Digital Corpus → New Tamil Research. The study emphasizes that AI should not be viewed as a replacement for human scholars but as an assistive technology capable of expanding their research capabilities. Such an approach can contribute to the preservation, accessibility, interpretation, and interdisciplinary study of Tamil's valuable manuscript heritage.

Keywords

Tamil Palm-Leaf Manuscripts, Artificial Intelligence, Digital Humanities, OCR, HTR, Computer Vision, Digital Preservation, Tamil Script, Digital Corpus.

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