



ABSTRACT SUBMISSION

Figurative and Iconographic Analysis of Arslantepe Late Uruk Period Seal Impressions with Image Processing Techniques

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Abstract

This study examines the iconographic and cultural significance of Late Uruk Period seals from Arslantepe through the application of image processing and artificial intelligence (AI) techniques. By combining conventional archaeological techniques with digital imaging, this research methodically categorises motifs and identifies chronological developments in seal iconography. The utilisation of machine learning algorithms, particularly Convolutional Neural Networks (CNNs), enables the categorisation of various recurring motifs, such as depictions of humans, animals and motifs. This, in turn, facilitates an enhanced understanding of their symbolic meanings within the historical context of the Late Uruk Period.

The methodology comprises the digitisation and preprocessing of the seal impressions, followed by the extraction of key visual features to facilitate detailed comparative analyses. This approach permits a comparison of Arslantepe seals with those from other contemporary Uruk-related centres across Mesopotamia and Anatolia, thereby revealing cultural and trade connections. The findings offer insights into the evolving artistic patterns and iconographic symbolism within the Uruk cultural sphere, contributing to a broader understanding of the region's intercultural exchanges. Furthermore, the study demonstrates the application of AI-driven techniques in archaeological research, establishing a framework for analysing similar artefacts and advancing iconographic studies with a more objective and scalable approach.

Keywords

Arslantepe, seal impressions, artificial intelligence, Late Uruk Period, Anatolian Archaeology

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