Artificial Intelligence Applications for Art Authentication

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The art market has undergone substantial expansion in recent years. The growing interest among investors in art as a financial investment, along with concerns regarding potential fraudulent activity, has led to an increased demand for effective and efficient methods for detecting forgeries. Consequently, a comprehensive evaluation of an artwork to ascertain its authenticity has become pivotal for prospective buyers, including public heritage institutions.

This talk will present two attempts to verify the authenticity of works of art using the latest developments in machine learning. The first methodology discussed employed supervised learning, wherein a classification model was trained utilizing a dataset of authenticity markers derived from detailed physical and chemical analyses of the artworks. The second

methodology was developed using unsupervised algorithms, with potential forgeries identified as anomalous instances within the dataset.

The practical aspects of implementing both methodologies will be addressed, alongside an evaluation of their effectiveness in the analysis of paintings attributed to the famous Baroque artist Michael Willmann, often referred to as the 'Silesian Rembrandt', and watercolours by the renowned Polish painter of the 19th century, Artur Grottger.

Fig. 1 Gemini_Generated_Image_lycntnlycntnlycn.jpg

The concluding section of this lecture will outline perspectives for the future development of this field and the potential benefits of employing an interdisciplinary approach to the authentication of artworks, as well as the inherent limitations arising from the availability of training data.

Funding

Literature

[1] Łydżba–Kopczyńska, B.I., Szwabiński, J.: *Attribution markers and data mining in art authentication*. Molecules 27(1) (2022) https://doi.org/10.3390/ molecules27010070

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