In the Eye of the Beholder: Employing Statistical Analysis and Eye Tracking for Analyzing Abstract Paintings

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Last century, the painters of the abstract art movement employed basic visual features such as colours, shapes, and texture to convey emotions. We investigate which elements of the painting are associated with positive and negative emotions by analysing 500 abstract paintings from the collections of Modern Art Museum (MART), Rovereto.

Particularly, we concentrate on paintings by Carlo Belli, Aldo Schmid, Luigi Senesi, and Luigi Veronesi, as their work is not the result of an improvisation but it is part of a deep theoretical reflection on the elements that make a painting. To obtain the ground truth, each painting was scored by 20 people as carrying a positive or negative response on a Likert scale of 1-7. We use the state-of-the-art Bag-of-Words classification framework to automatically predict emotional conveyed by the artwork and obtain an accuracy of around 80%. Additionally, we are also able to visualize how each element of a painting contributes to the overall emotional impression.

This allows answering the important question why a specific painting is perceived as positive or negative. An independent analysis done by an art historian confirms that the proposed methodology manages to accurately “capture” the emotion embedded into most of the paintings.