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# Perception of Visual Art and Topological Data Analysis

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I will present applications of topological data analysis (TDA) to study differences in the perception of painting images. A psychological and neurophysiological experiment we conducted showed that physiological responses, in this case, eye movements, show variation depending on how the image being perceived was produced. In our experiment, we compared responses for abstract images painted by a professional artist (" real art") and computer-generated using neural networks. The analysis of eye movements reveals, as expected, that observers focus on specific features within the image. It is reasonable to assume that our visual attention is primarily drawn to geometric objects In order to support these observations and reasoning we proposed to use methods of algebraic topology ("Topological Data Analysis"). We were able to show significant differences between the topological properties of "real"and generated images.

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