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(Machine) Learning to create artwork and quantum fields (Pavel Buividovich / University of Liverpool)

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Machine Learning algorithms for image generation are often considered as competitors for human artistic activities. We discuss a somewhat unexpected aspect of this competition, demonstrating how GenAI can help to detect human-made artwork forgeries made in the style of famous painters. We then discuss a less visual, but technically more advanced application of GenAI to the generation of "snapshots" (configurations) of quantum fields. In contrast to image generation, where success is measured by human perception, this application of GenAI imposes much stricter constraints on statistical properties of the output data which motivate deeper mathematical insights in GenAI models. We review some of the state-of-the-art GenAI algorithms suitable for generation of both artistic images and quantum fields.

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