Digitally removing layers of brush strokes through statistical analysis of color and shape and with curvature based inpainting

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Underpaintings and pentimenti—revealed through x-ray imaging and infra-red reflectography—are important evidence revealing the intermediate states of a work and thus the working methods of many artists. Although such images do not reveal the color of the underdrawings directly, chemical channel information can be used to recover estimates of the hidden colors.¹

For some passages in some works, open brush work

Shahram, Stork and Donoho introduced the De-pict algorithm, which xxx (Fig. 1).

What that preliminary work served as a proof of concept that computer image analytic methods could recover some occluded images, the work needed further refinement before it could be a tool for art scholars.

We extended that earlier work by refining the algorithm using “ground truth” data: passages of layers of brush strokes in which the intermediate layers were recorded photographically.

Our current work rectifies this omission.²

Figure 1. The original Creation was top row, read right-to-left; analysis is the bottom row, read left-to-right.

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Aid in the representation of strokes for authentication.⁴

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Our methods, slightly modified, may be applied to the drip paintings of Jackson Pollock as well, where the color segmentation step is more accurate because Pollock poured unmixed car paint.⁷,⁸
REFERENCES


