

On the geometry of color images.

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Abstract

Convolution of monochrome images is a process which smoothes edges and details. It is modeled by parabolic differential equations. Color images, however, are not so simple. Multichannel convolution is not uniquely defined, and it strongly depends on the nature of channel decomposition (color model). As edges are geometric features, related to the curvature of the image, it is important to introduce the geometry of images in order to process them.

In this talk, we will settle some basic geometry concepts in multichannel images. By using the idea of dimensionality, which is more common in physics than in mathematics or engineering, we develop a color model that allows us to separate geometry from chromatism, and we will show, through examples and theoretic results the robustness of this model when used to process the images.

References

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