

Novel Diffusion-Based Models for Image Restoration and Interpolation

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Abstrak

This book covers two essential PDE-based image processing fields: image denoising and image inpainting. It describes the state-of-the-art PDE-based image restoration and interpolation (inpainting) techniques, focusing on the latest advances in PDE-based image processing and analysis, and explores novel techniques involving diffusion-based models and variational schemes. The PDE and variational schemes clearly outperform the conventional approaches in these areas, and can successfully remove image noise and reconstruct missing or highly degraded regions, while preserving the essential features and avoiding unintended effects. The book addresses researchers and graduate students, but is also well suited for professionals in both the mathematics and electrical engineering domains, as it provides rigorous mathematical investigations of the image processing models described, as well as mathematical treatments for the numerical approximation schemes of these differential models.