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电子科学

基于PDE算法的指静脉图像预处理

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摘要:

为了更好地去除手指静脉图片中的噪声, 提出一种基于偏微分方程算法（PDE）的去噪新模型. 该模型在P M模型的基础上, 采用新的扩散函数, 并结合四阶PDE模型对原模型结构进行变换. 用合成图像和真实指静脉图像分别对新模型进行实验验证, 结果表明, 相对于P M模型, 新模型使信噪比（SNR）值提高了约5 dB, 且能在去除噪声的同时很好地保持指静脉特征.

关键词: 偏微分方程(PDE); 图像去噪; P M模型 信噪比（SNR）

Preprocessing of Finger Vein Image Based on PDEs

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Abstract:

According to the characteristics of finger vein image, a new denoising model based on partial differential equations was presented. This model uses the new diffusion function based on the traditional P M model, and combines with fourth order partial differential equations model to transform the original model structure. The performance of the new model is verified by both synthetic and real finger vein images. It shows that the new model could increase the signal to noise ratio up 5 dB and maintain the features of finger vein image better compared with the original model.

Keywords: partial differential equations (PDE) image denoising P M model signal to noise ratio (SNR)

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