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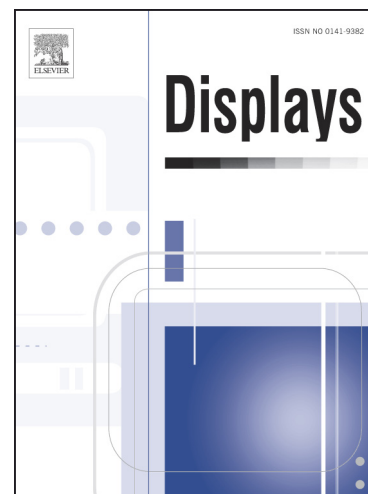
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Taylor Series and Adaptive Directional Selection for Real Time Demosaicking

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Abstract

In this paper, we introduce an efficient demosaicking method based on Taylor series and adaptive direction selection using adaptive weight. Taylor series is used to approximate the to-be-interpolated value using values of neighbor pixels in four directions. Instead of estimating the edge orientations via limited candidate directions as conventional demosaicking methods, we propose an adaptive direction and weight selection based demosaicking method to achieve high efficiency. The weight is used to evaluate the similarity among the neighbor pixels. Experimental results indicate that the proposed method outperforms existing approaches in both objective and subjective performance. Key words: Taylor series, demosaicking, adaptive method, similarity.

Keywords: Taylor series, demosaicking, color channel, real time process.

1. Introduction

In most digital cameras, images are acquired by a single image sensor whose surface is covered with a color filter array (CFA) to minimize the cost and size of cameras because the image sensor is the most expensive part of the camera [1]. A single image sensor processes only one color channel at each pixel location. Therefore, the acquired image is in the pattern of

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