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Colorimetrically accurate gray component replacement using the additive model

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Abstract

In four color printing, gray component replacement (GCR) is a method of replacing the achromatic component of a mixture of chromatic inks by a corresponding amount of the achromatic ink. Simple approaches to GCR lead to unacceptable color shifts. In this paper, the method using multiple processing steps is proposed. The novelty of the proposed method is augmentation of *masking equations*, which allows finding solutions for a pre-set amount of the black ink. The method performance was evaluated and compared with state of the art commercial solution. The experiments have shown that the proposed model is on average capable of achieving 40-55% ink savings with median colorimetric difference of less than 0.3, thus preserving the visual appearance of images.

Keywords: Gray component replacement, Printing process model, Ink optimization, Radial basis functions

2010 MSC: 00-01, 99-00

1. Introduction

Printing ink market is growing in spite of the fact that the market of printed media is declining. The growing packaging market requires printing and it cannot be replaced by electronic media. According to [1] the growth of printing ink market is 3% per year. As stated in recently published report, global printing

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