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Effective Digital Image Watermarking in YCbCr Color Space Accompanied by Presenting a Novel Technique Using DWT

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Abstract

In this paper, a quantization based watermark casting and blind watermark retrieval algorithm operating in YCbCr color space using discrete wavelet transform (DWT), for ownership verification and image authentication applications is implemented. This method uses implicit visual masking by inserting watermark bits into only the wavelet coefficients of high magnitude, in Y channel of YCbCr color space. A blind watermark retrieval technique that can detect the embedded watermark without the help from the original uncorrupted image is devised which is computationally efficient. The new watermarking algorithm combines and adapts various aspects from existing watermarking methods. Experimental results show that the proposed technique to embed watermark provides extra imperceptibility and robustness against various signal processing attacks in comparison with the same technique in RGB color space.

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Գունավոր պատկերի՝ YCbCr տարածության մեջ DWT կիրառմամբ թվային ջրանշման նոր արդյունավետ մեթոդ

Մ. Խալիլի և Դ. Ասատրյան

Ամփոփում

Հոդվածում առաջարկվել է չարտոնված օգտագործումից թվայնացված պատկերի պաշտպանության ալգորիթմ՝ երկչափանի ընդհատ վեյվլետ-ձևափոխությունների (DWT) կիրառմամբ: Ալգորիթմը մշակվել է գունավոր պատկերի YCbCr տարածության համար, ընդ որում ջրանիշի բիտը ներդրվում է այդ տարածության Y բաղադրիչի առավել մեծ մագնիտուդով վեյվլետ-գործակիցների մեջ: Ցույց է տրվել, որ առաջարկված մեթոդը ապահովում է ջրանիշի ավելի բարձր անտեսանելիություն և կայունություն տարբեր տեսակի հարձակումների նկատմամբ, քան գունավոր պատկերի RGB տարածության մեջ գործող նույնատիպ ալգորիթմները: