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A reversible video steganography algorithm for MVC based on motion vector

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Abstract In this paper we present a reversible video steganography scheme for hiding secret data into the motion vector of each block in 3D MVC videos. Under this approach the idea of the inner product is introduced to achieve reversibility. By establishing the inner product between the motion vector and the modulation vector and setting the embedding conditions, we embed 1 bit data into each motion vector and the proposed algorithm is reversible. Moreover, in order to avoid distortion drift, we only embed data into b4-frames with the coding feature of 3D MVC videos. Experimental results also confirm that the proposed scheme can provide expected acceptable video quality of stegovideos and successfully achieve reversibility.

Keywords Reversible video steganography · Multi-view coding · Motion vector · Inner product · Distortion drift

1 Introduction

Data hiding is referred to as a process to hide data into the cover media [4]. In most cases, the cover media will be affected by some distortion after data hiding and the processed media cannot be converted back to the original one. However, in some applications, such as medical diagnosis, military images, remote sensing image processing, legal certification and evidence and other fields, it is critical to restore the marked media back to the original media [6]. And the reversible video steganography techniques are used in a variety of domains at present.

Recently, some reversible steganography techniques have been reported in some literatures. The first reversible data hiding algorithm was the patent submitted by Bart in 1994 [3]. After

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