

貝爾圖形之可逆式資料隱藏

方嘉偉、張世旭

E-mail: 363569@mail.dyu.edu.tw

摘要

近年來受到數位化的影響，數位相機普遍被社會大眾所應用，使數位相機結合資料隱藏技術是一項重要的議題。數位相機從景物捕捉到製成圖檔的過程中需要經過多次運算。為降低成本與減少體積，數位相機通常只使用單一感光元件(Charge-Coupled Device, CCD)和彩色濾波器陣列(Color Filter Array, CFA)來擷取影像資訊，再利用內插方法將影像還原成全彩影像，此過程稱為解馬賽克(demosaicking)，解馬賽克被廣泛運用在數位相機的設計中。資訊隱藏技術的好處在於能夠用於智慧財產保護，防止其遭到破壞、偷竊。本文所提出之方法，將秘密資訊藏入在內插回來的影像中可以提升秘密資訊的安全度是一項不錯的應用。本文所提出基於貝爾圖形的可逆式資料隱藏方法，將秘密資訊藏入在經由貝爾濾波器處理過後的數位影像上後再進行傳遞。透過本文提出之方法，在位元藏量(bit per pixel, bpp)等於0.8時，其平均的影像訊號雜訊比(Peak Signal to Noise Ratios, PSNR)等於52.98dB，在高藏量下仍保有較高的影像品質。在擷取秘密資訊後，可以完整地回復數位相機原本所要輸出的影像。本文所提出的方法簡單，容易直接植入數位相機上使用。

關鍵詞：資料隱藏、解馬賽克、色彩濾波器、貝爾圖、感光元件

目錄

封面內頁 簽名頁 中文摘要	iii	ABSTRACT	v
iv 誌謝	v		
目錄	vi	圖目錄	viii
viii 表目錄	ix	第一章 緒論	1
ix 第一章 緒論	1	1.1 研究動機與目的	1
1.1 研究動機與目的	1	1.2 論文架構	2
2 第二章相關研究	3	2.1 數位相機架構與貝爾圖形	3
3 2.1.1 3-CCD:	5	2.1.2 Single-CCD	5
5 2.2 解馬賽克方法	11	2.2.1 ECI 演算法	12
12 2.3 相關研究	14	第三章本論文之可逆式資料隱藏方法	17
17 3.1 資料藏入	18	3.2 資料提取	22
22 第四章實驗結果	26	第五章結論	46
46 參考文獻	47		

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