

基於上下文關係的向量量化索引值編碼

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摘要

在向量量化的影像壓縮中，影像檔經編碼簿編碼後，所產生的索引檔，若能再進一步對索引值進行無失真壓縮，將可提高其壓縮率。本文提出改善2005年Chen與Yu所提之索引檔壓縮方法，針對索引值與鄰近索引值的關係，決定該索引值的編碼。我們將鄰近關係分成七種型態，針對各種型態決定編碼的方式，不同型態給予不同編碼方法。以實驗結果證明，索引檔檔案經過所提的方法壓縮後，比較2005年Chen與Yu所提之索引檔壓縮方法，其索引檔案大小可再次的減少。以Lake影像檔為例，其檔案大小最高可再減少191 bytes；以Lena影像檔為例，其檔案大小可再減少37 bytes；七張實驗的影像檔，平均可減少約46 bytes，故所提方法可提高壓縮率。利用索引值與其相鄰索引值的相關性來決定各類型的編碼方法，而編碼的長度不同，所以各類型數量的多寡，將是影響壓縮率的因素。若能先對被壓縮的影像掃描一遍，統計分析其數量，再決定給予的前置碼，對各影像檔的壓縮率，一定可達到最好的效果，關於這一方面也會加以探討。另一方面，編碼簿的產生方式也是直接影響壓縮率的重要因素，文中再討論codebook的產生的方法，以及選擇訓練的樣本，對壓縮率的影響。

關鍵詞：影像壓縮;無失真壓縮;向量量化;索引值編碼

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