基於 FPGA 灰階影像分割之實現 = Implementation of grayscale image segmentation based on FPGA

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摘 要

為了將影像分割為多重灰階相似的區域本文提出了一個以FPGA為基礎之多閥值演算法HVEM（Histogram-based Valley Estimation Method），其計算複雜度低且能夠有效的實現在FPGA上，能夠從直方圖中估測所有的直方圖山谷，自動計算閥值定義分割類別數。Otsu方法很容易可以拓展為多閥值但計算卻非常耗時，且難以實現於FPGA上，為了增強本文的強健性我們將本文之演算法與Otsu方法做大量的測試圖比較。實現於FPGA其運算速度可達191MHz，相當於每秒可處理1,475張256×256之大小的灰階影像，已達到即時影像處理之需求。

關鍵詞 : Otsu ; HVEM ; FPGA ; Multi-Threshold ; Segmentation

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