排版之可旋轉式排列演算法則

李季昌、賴元隆

E-mail: 9708035@mail.dyu.edu.tw

摘 要

裁切、堆疊與排版的問題對於業界是很重要的課題，而擁有一套優良的全自動排版系統，不但可以提升效率、精簡人力，更對於鈑金、皮革、造紙業等許多原物料成本佔很大比重的行業有著決定性的競爭力。 本研究討論之二維排版最佳化的目的，是將固定數目的不同或相同零件（piece）排列於基板（sheet）上，以基板的可排面積使用率最高或是浪費最少空間為目標。決定排版結果的優劣，一般而言可分為排列演算（Placement Algorithm）與排列次序（Permutation）兩個重要因素。排列演算的意思為零件排入基板的位置，而排列次序則是零件排入基板的順序。如果排列演算的方法符合需求，而排列次序也是正確的，則最後就有可能得到最佳解。 本研究提供新的「排列演算」法則－面積分割法，搭配零件旋轉機制與基因演算法則。將排版結果與文獻及商用軟體進行測試比較。最後結果顯示本研究的確可針對不同情況的需求，得到良好的排版結果。

關鍵詞 : 自動排版 ; 排列演算 ; 基因演算

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