The Study and Implementation of Character Extraction for Engineering Drawing Images

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ABSTRACT

The increasing popularity of the computer and the information technologies, but a lot of engineering drawing images still stored as paper. Thence, we can scan those papers and save in the computer, if we want to develop further in these images. This thesis presents the study and implementation of character extraction for engineering drawing images. Engineering drawing images consists mainly of line and writing. First, the threshold method is used to separate the image into background and foreground. According to the features of engineering drawing images, we use the cascading applications to fill the line and use connection of points to group the line and writing region. Then, two forms of operation in morphology image process: dilation and erosion are applied to rebuild it. Resulting from errors on the extraction when the fairly close to characters and lines. In order to solve the above problems, the connected component labeling as well as some judgment conditions are used to separate the characters and lins for improving the correct rate of extraction. Experimental results show that, this method can be used to identify the location of character for the engineering drawing images, which are more quality on simple structure of the engineering drawing images.

Keywords : Character extraction、Engineering drawing images、Thresholding、Morphology、Connected component labeling

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REFERENCES

[1]Amir Sedighi, Mansur Vafadust,“ A new and robust method for character segmentation and recognition in license plate images, ” Expert Systems with Applications, Volume 38, Issue 11, Pages 13497 – 13504, 2011.

[2]J. M. Guo, and Y. F. Liu,“ License Plate Localization and Character Segmentation with Feedback Self-Learning and Hybrid Binarization Techniques, ” IEEE Transactions on Vehicular Technology, Volume 57, No. 3, pp. 1417 – 1424, 2008.

[3]Babu, C.N.K. and Nallaperumal, K.,“ A license plate localization using morphology and recognition ”, In Proceedings of India Conference, Volume 1, pp.34 – 39, 2008.

[4]C. H. Lee, K. L. You and Y. P. Lin,“ Dynamic real-time license plate recognition “ , Journal of Technology, Vol. 25, No. 2, pp. 151-165, 2010.

[5]邱智國，“ 車牌辨識系統的研製 ”，國立台灣科技大學電機工程系碩士論文， 2007年。

[6]鍾國亮，“ 影像處理與電腦視覺 ”，東華書局，2002 年。

[7]梁世昌，“ 工程圖掃描影像之現象量化 ”，大葉大學資訊工程系碩士論文，2010年。

[8]羅致誠，“ 使用特徵值以識別二值化圖形之方法的探討 ”，甲大學材料與製造工程碩士在職專班機械工程組碩士論文，2010年。

[9]Poon, J.C.H.; Ghadiali, M.; Mao, G.M.T. and Sheung,L.M.,“ A robust vision system for vehicle license plate recognition using grey-scale morphology, ” IEEE International Symposium on Industrial Electronics, Volume 1 , pp. 394 – 399, 1995.

[10]Jun-Wei Hsieh, Shih-Hao Yu, and Yung-Sheng Chen,“ Morphology-based license plate detection from complex scenes, ” IEEE Journal of Electronic Imaging, Volume 11, No. 4, pp. 507 – 516, 2002.

[11]P.V. Suryanarayana, S.K. Mitra, A. Banerjee, and A.K. Roy.,“ A Morphology Based Approach for Car License Plate Extraction ”, In Proceedings of India Conference, pp.24 – 27, 2005.

[12]Linda G. Shapiro and George C. Stockman.“ Computer Vision, ”Prentice-Hall, 2001.

[13]R.C. Gonzalez, R.E. Woods, and S.L. Eddins,“ Digital Image Processing Using MATLAB, ” Prentice-Hall, 2004.

[14]楊昌祐，“ 中文扭曲文件影像之還原與文字切割 ”，台灣科技大學電子工程系碩士論文，2011年。

[15]陳翔傑，“ 自動化車牌辨識系統設計 ”，國立中央大學電機工程研究所碩士論文，2005年。