車輛之偵測與車型判定

陳柏鑫、曾逸鴻

E-mail: 321869@mail.dyu.edu.tw

摘 要

由於工商業活動的日益頻繁，和國民生活品質快速的成長，使得車輛數目大幅度的增加，所以不得不藉由視訊監控設備和電腦視覺系統的管理，在車輛數目如此大量的增加之後，交通的監控勢必成為非常讓人注意的議題。目前利用以電腦與監視攝影機為主的監視系統，只能為監測者做長時間的觀察動作，而無法判斷某路段在特定的時間內通過的車輛種類與數量。因此為了使智慧型監控系統能更精確的進行車輛偵測，本研究針對移動車輛的車型判定作相關的研究。 在車型判定的方法中，所以，我們在做車輛偵測時，先將要偵測的區域框選起來，再利用背景相減的方法，將前景物體擷取出來，能減少之後作前景物體偵測的範圍，另外也能先過濾掉多餘的背景，加速偵測出前景車輛的位置，接著再依造車道寬與各型車輛的寬度比例、周圍背景面積，並分別利用此兩種特性進行各型車輛的分群以判定車輛物體之類型，以得到更為準確的車輛偵測效果。

關鍵詞 : 視訊監控、智慧型運輸系統、車輛偵測、車型判定

目錄

參考文獻

一、中文部份 交通部(2009)，臺閩地區機動車輛登記數[線上資料]，來源: http://www.motc.gov.tw/ [2010, June 10]。 內政部營建署(2007)，市區道路工程規劃及設計規範之研究[線上資料] ，來源: http://w3.cpami.gov.tw/district6/d3.htm [2010, March 27] 。 內政部營建署(2007)，市區道路工程規劃及設計規範之研究[線上資料]，來源: http://w3.cpami.gov.tw/district6/d3.htm [2010, March 27] 。 黃吉緯，曾逸鴻(2009)，整合多搜尋方法之影像資料庫檢索系統，科學與工程技術期刊，5(3)，1-12。 二、英文部份 Chen, W.-Y., & Chung, C.-H. (2010). Robust poker image recognition scheme in playing card machine using Hotelling transform, DCT and run-length techniques. Digital Signal Processing, 20(3), 769-779. Chen, Y.-T., Chen, C.-S., Huang, C.-R., & Hung, Y.-P. (2007). Efficient hierarchical method for background subtraction. Pattern Recognition, 40(10), 2706-2715. Dubuisson J. M. P., Lakshmanan, S., & Jain, A. K. (1996). Vehicle segmentation and classification using deformable templates. Pattern Analysis and Machine Intelligence, IEEE Transactions on, 18(3), 293-308. Fei, X., Guili, X., Yuehua, C., & Yupeng, T. (2009). An improved thinning algorithm for human body recognition. Proceedings of 2009 IEEE Workshop on Imaging Systems and Techniques (pp. 416-420), China: Shenzhen. Haoui, A., Kavaler, R., & Varaiya, P. (2007). Wireless magnetic sensors for traffic surveillance. Emerging Commercial Technologies, 16(3), 294-306. Hu, F., Zhang, Y., & Yao, L. (2005). An effective detection algorithm for moving object with complex background. Paper presented at the International Conference on Machine Learning and Cybernetics, 8, 5011-5015. Jia, Y., & Zhang, C. (2009). Front-view vehicle detection by Markov chain Monte Carlo method. Pattern Recognition, 42(3), 313-321. Jin, X., & Davis, C. (2007). Vehicle detection from high-resolution satellite imagery using morphological shared-weight neural networks. Image and Vision computing, 25(9), 1422-1431. Junejo, I., & Foroosh, H. (2008). Euclidean path modeling for video surveillance. Image and Vision computing, 26(4), 512-528. Kang, H., & Kim, D. (2005). Real-time multiple people tracking using competitive condensation. Pattern Recognition, 38(7), 1045-1058. Kastrinaki, V., Zervakis, M., & Kalaitzakis, K. (2003). A survey of video processing techniques for traffic applications. Image and Vision computing, 21(4), 359-381. Kinoshita, K., Enokidani, M., Izumida, M., & Murakami, K. (2006). Tracking of a moving object using

one-dimensional optical flow with a rotating observer. Paper presented at the Control, Automation, Robotics and Vision, 2006. ICARCV International Conference, 1-6. Koller, D. (1993). Moving object recognition and classification based on recursive shape parameter estimation. Paper presented in the 12th Israel Conference on Artificial Intelligenc, Computer Vision, (pp. 27-28), Israel: Tel-Aviv. Lai, J. Z. C., Huang, T.-J., & Liaw, Y.-C. (2009). A fast k-means clustering algorithm using cluster center displacement. Pattern Recognition, 42(11), 2551-2556. Lianqiang, N., & Nan, J. (2008). A Moving Objects Detection Algorithm Based on Improved Background Subtraction. Paper presented at the Intelligent Systems Design and Applications, 3, 604-607. Oh, C., & Ritchie, S. (2007). Recognizing vehicle classification information from blade sensor signature. Pattern Recognition Letters, 28(9), 1041-1049. Otsu, N. (1979). A Threshold Selection Method from Gray-Level Histograms. Systems, Man and Cybernetics. IEEE Transactions on, 9(1), 62-66. Poppe, C., De Bruyne, S., Paridaens, T., Lambert, P., & Van de Walle, R. (2009). Moving object detection in the H. 264/AVC compressed domain for video surveillance applications. Journal of Visual Communication and Image Representation, 20(6), 428-437. Pornpanomchai, C., Liamsanguan, T., & Vannakosit, V. (2008). Vehicle detection and counting from a video frame. Proceedings of the 2008 International Conference on Wavelet Analysis and Pattern Recognition, (pp. 30-31), China: Hong Kong. Pyung-Soo, H., Ki-Yeol, E., Jae-Young, J., & Moon-hyun, K. (2009). A statistical approach to robust background subtraction for urban traffic video. Proceedings of the 2009 Second International Workshop on Computer Science and Engineering, (pp. 177-181), United States of America: Washington. Senior, A., Hampapur, A., Tian, Y., Brown, L., Pankanti, S., & Bolle, R. (2006). Appearance models for occlusion handling. Image and Vision computing, 24(11), 1233-1243. Tissainayagam, P., & Suter, D. (2005). Object tracking in image sequences using point features. Pattern Recognition, 38(1), 105-113. Weihua, W. (2009). Reach on Sobel Operator for Vehicle Recognition. Proceedings of the 2009 International Joint Conference on Artificial Intelligence, (pp. 448-451), China: Hainan Island. Xinguo, Y., Hon Wai, L., Changsheng, X., & Qi, T. (2004). A robust Hough-based algorithm for partial ellipse detection in broadcast soccer video. Paper of IEEE International Conference on Multimedia and Expo, (pp. 1555-1558), Taiwan: Taipei.. Zehang, S., Bebis, G., & Miller, R. (2006). On-road vehicle detection: a review. Pattern Analysis and Machine Intelligence, IEEE Transactions on, 28(5), 694-711. Zhang, H., & Kaufman, A. (2007). A classification-based rendering method for point models. Computers & Graphics, 31(5), 730-736. Zhou, H., & Liu, Y. (2008). Accurate integration of multi-view range images using k-means clustering. Pattern Recognition, 41(1), 152-175.