

視訊影像局部強化之研究

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摘要

隨著資訊科技日益發達，安全環境漸漸受到重視，處處可見視訊監控設備，然而當突發事件發生時，所拍攝到的畫面，常因人物過小，人眼無法辨別該人員的細部特徵。利用影像局部放大並強化的技術，可配合電腦視覺技術，整合成可準確追蹤移動人員的智慧型視訊監控系統。目前在影像放大技術中，都會使物體邊緣產生鋸齒狀以及模糊的現象，反而降低影像品質。本研究提出的影像局部放大及強化方法，針對從視訊監控畫面擷取出的前景物體影像，以不同之影像區域形態做為放大並強化的依據，再利用改良式的影像內插方法，調整放大後影像內部之像素值，以減少模糊情況，並讓鋸齒邊緣變的更平順，以提升放大後的影像品質，可顯示影像較細微的資訊，提高視訊監控系統的追蹤準確度。

關鍵詞：影像強化;影像內插;邊緣方向內插

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- Allebach, J. & Wong, P. W. (1996). Edge-directed interpolation. IEEE Int. Conf. Image Processing, Lausanne, Switzerland, pp.707-710. Battiato, S., Gallo, G. & Stanco, F. (2002). A locally-adaptive zooming algorithm for digital images. Image Vision and Computing Journal, 20(11), pp.805-812. Chen, M. J., Chin, C. H. & Lee, W. L. (2003). A fast edge-oriented algorithm for image interpolation. Image and Vision Computing, 23(9), pp.791-798. Collins, R. T., Liu, Y. & Leordeanu, M. (2005). Online selection of discriminative tracking features. IEEE Transactions on Pattern Analysis and Machine Intelligence, 27 (10), pp.1631-1643. Itoh, Y. (1996). An edge-oriented progressive image coding. IEEE Transactions on Circuits and Systems for Video Technology, 6(2), pp.135-142. Jensen, K. & Anastassiou, D. (1995). Subpixel edge localization and the interpolation of still images. IEEE Transactions on Image Processing, 4(3), pp.285-295. Kang, H. G. & Kim, D. (2002). Real-time multiple people tracking using competitive condensation. Pattern Recognition, 38(7), pp.1045-1058. Karaulova, I. A., Hall, P. M. & Marshall, A. D. (2000). A hierarchical model of dynamics for tracking people with a single video camera. British Machine Vision Conference, pp.252 – 361. Kim, E. Y. & Park, S. H. (2006). Automatic video segmentation using genetic algorithms. Pattern Recognition Letters, 27(11), pp.1252-1265. Li, X. & Orchard, M. T. (2001). New edge-directed interpolation. IEEE Transactions on images processing, 10(10), pp.1521-1527. Magee, D. R. (2004). Tracking multiple vehicles using foreground, background and motion models. Image and Vision Computing, 22 (2), pp.143-155. McKenna, S. J., Jabri, S., Duric, Z., Rosenfeld, A. & Wechsler, H. (2000). Tracking Groups of People. Computer Vision and Image Understanding, 80(1), pp.42-56. Ouwerkerk, J. D. van. (2006). Image super-resolution survey. Image and Vision Computing, 24(10), pp.1039-1052. Rafael, C. & Richard, E. (2001). Digital Image Processing. New Jersey: Prentice-Hall. Rowley, H. A. & Rehg, J. M. (1997). Analyzing articulated motion using expectation-maximization. In Proceedings of the IEEE International Conference on Pattern Recognition, pp.935-941. Ren, Y., Chua, C. S. & Ho, Y. K. (2003). Statistical background modeling for non-stationary camera. Pattern Recognition Letters, 24(1-3), pp.183-196. Senior, A., Hampapur, A., Tian, Y. L., Brown, L., Pankanti, S. & Bolle, R. (2006). Appearance models for occlusion handling. Image and Vision Computing, 24 (11),

pp.1233-1243. Sonka, M., Hlavac, V. & Boyle, R. (1999). *Image Processing, Analysis, and Machine Vision*. PWS Publishing, Pacific, Pacific Grove, CA. Tseng, Y. H. & Lin, Y. Y. (2007). Multiple objects tracking in a night environment with weak lamplight. *Proceedings of the 20th Conference on Computer Vision, Graphics and Image Processing*, pp.786-793. Tseng, Y. H. & Xiao, H. Z. (2005). Background model construction and maintenance in a video surveillance system. *Proceedings of the 18th Conference on Computer Vision, Graphics and Image Processing*, pp.303-309. Tissainayagam, P. & Suter, D. (2005). Object tracking in image sequences using point features. *Pattern Recognition*, 38(1), pp.105-113. Wang, H. & Suter, D. (2007). A consensus-based method for tracking: Modelling background scenario and foreground appearance. *Pattern Recognition*, 40(3), pp.1091-1105. Wu, Q. Z. & Jeng, B. S. (2002). Background subtraction based on logarithmic intensities. *Pattern Recognition Letters*, 23(13), pp.1529-1536.