Image Processing and Characteristic Extraction of Reference Plane of Object

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ABSTRACT

In the area of digital image processing, problem-solving usually demanded extensive experiments which including using numbers image samples to test or model the image software. The thesis is about applying C-Program to build a functional integrated program for digital image processing. It is exerting dual CCD image system to take samples and then applying the threshold limit value, binarization, and thinning function of the program to clarify the image outline and turn it into the pixel outline. In the process of testimony, the image noise would cause misunderstanding; therefore, the image mark was applied to effectively extract the needed image. Then the skill of Skeletonize of MATLAB was utilized to display the image branch and the trellis—liked supporting line. After the Skeletonize, the process continued to the step of Endpoint, which was to reveal the position of every end point and then utilized the virtual part of this experiment. Through the process of comparison, the same object of the dual image will on the same coordinating position.

Keywords : CCD Image System、Threshold Limit Value、Binarization、Thinning

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REFERENCES

[1] 求是科技，“ Visual C++?位影像處?技術大全 ”，文魁資訊有限公司，2008[2] 賴岱佑、?敏，“ ?位影像處?技術手冊?，文魁資訊有限公司，2007[3] ?國珍，“ ?位影像處??，儒?圖書有限公司，2004[4] Alasdair McAndrew、徐曉佩、?震昌、“ Introduction toDigital Image Processing with MATLAB?，高?圖書有限公司，2005[5] Rafael C. Gonzalez、Richard E. Woods、Steven L. Eddins、繆紹綱，“ Digital Image Processing Using MATLAB?，東華書局，2005[6] 井上誠喜、八目伸?、?正樹、中須英輔、三谷公二、奧井誠人、吳上?、?宏墩，“ C 語言?位影像處??全華科技圖書股份有限公司，2006[7] 廖進德、蘇慶?，“ 影像處?技術於?牌辨?系統之研究?，大?大學 工業工程與科技管?學系，2007[8] ?昭男、吳建達，“ 以影像處?技術為基礎之胎痕?別系統?，大?大學 ?輛工程研究所，2004[9] 張家維、紀華偉，“ 以雙影像系統建?物件空間基面之研究?，大?大學 機械工程研究所，2008[10] 張佑瑋，“ 自動灰階影像上色系統?，國?臺灣 科技大學資

訊管?系 2005? 73 ?[11] T. Uchiyama and M. A. Arbib,“ Color image segmentationusing competitive learning ”, IEEE Trans. on Pattern Anal.Machine Intell, Vol. 16, pp. 1197-1206, 1994.
[12] E. Littmann and H. Ritter,“ Adaptive color segmentation – A comparison of neural and statistical methods, ” IEEETrans. On Neural Networks, Vol. 8, Jan. 1997.
[13] H. -D. Cheng, Y. Sun,“ A hierarchical approach to colorimage segmentation using homogeneity, ” IEEE Trans. onImage Processing, Vol. 9, No. 12,pp.2071-2082, 2000.
[14] N. Vandenbroucke, L. Macaire, J. -G. Postaire,“ Color imagesegmentation bypixel classification in an adapted hybridcolor space. Application to soccer image analysis, ” ComputerVision and Image Understanding, Vol. 90, pp.190-216,2003.
[15] Yamany, S.M.; Farag, A.A （1999）,“ Free-form surfaceregistration using surfacesignatures ”,Computer Vision, TheProc.IEEE Conf. , Volume: 2 , p.1098 – 1104[16] Lisa, G Brown,（1992）“ A Survey of Image RegistrationTechniques ”, ACMComputing Survey. Vol 24, No. 4,p.325-376[17] Goshtasby, A. (1988)“ Image Registration by local approxmation “ ,Image VisionComputingVol.6,No.4,p.255-261[18] Wolberg, G. (1990) ” Digital Image Warping ”, IEEE. ComputerSociety Press, LosAlamitos. Calif.applications, ” D.? 74 ?Reidel PublishingCompany, 1987.
[19] Lew, M.S., Huang, T.S., Wong, K.W.,“ Learning and featureselection in stereo matching, ” IEEE Transactions on PatternAnalysis and Machine Intelligence , Vol. 16, No.9,pp.869-881, 1994.
[20] Gonzalez R. C. and Woods R. E., "Digital Image Processing,2nd ed.",Prentice-Hall, 2002[21] P.J.M Aarts and Van Laarhoven；” Simulated annealing andapplications: Mathematics and its Gonzalez , R. C., andWoods, R. E.,“ Digital Image Processing, ” Addison Wesley,United States of America, 1993.
[22] Vishvjit S. Nalwa, ” A Guided Tour of Computer Vision, ” Addison-Wesley Publishing Company,1993.
[23] Rong Seng Chang, Yeu-Jent Hu, Chern Sheng Lin, DigitalImage Processing for Detecting Crack Growths Using aCaustic Method , Proceeding of NSC, 18 (6) 614-624(1994)[24] Chern Sheng Lin, Rong Seng Chang, Yeu-Jent Hu, ComputerSimulation and Image Processing Technology for Investigatingthe Characteristics of the Shape Function of aHolographic Microlens, Journal of Optical Memory andNeural Networks, 3 (3) 343-352 (1994)[25] Rong-Seng Chang, Chern Sheng Lin and H J Shieh, AStudy of the Behavior of a Muscle Pulsing with Phase? 75 ?Moire Imaging System, Proceeding of NSC, 20 (2) (1996)accepted[26] Cooper, D.B., and Elliott, H., "A Maximum LidelihookFramework for Boundary Estimation in Noise Images,"IEEE 1978 Pattern Recognition & Image Processing, pp.25-31.
[27] Duda, R.O., and Hart, P.E., Pattern Classification and SceреAnalysis, John Wiely & Sons, New York 1973.
[28] Guo, Y., and Dooley, K.J., 1992, "Identification of ChangeStructurein Statistical Process Control," International Journalof Production Research, Vol. 30, pp. 1655-1669.
[29] Jiang, B.C., and Shiau, Y.R., 1990. "A Systematic Methodologyfor Determing/Optimizing a Machine Vsision System'sCapability,"International Journaal of Machine Visionand Applications, Vol.3,pp. 169-182.
[30] Loizous, G. and Maybank, S.J., "The Nearnest Neighborand the BayesError Rates," IEEE Transactions on PatternAnalysis and Machine Intelligence, Vol. PAMI-9, 1987, pp.254-262.
[31] Minor, L.G., and Sklansky, J., "The Detection and Segmentationof Blobsin Infrared Images," IEEE 1981 PathernRecognition & Image Processing, pp.464-469.
[32] Prewitt, J.M.S., Barber, A. and Wu, S.C., "An Applicationof PatternRecognition to Histology," IEEE 1978 Patterw? 76 ?Recognition & Image Processing, pp. 499-506.
[33] Saedtler, E. "Automation of Reactor Monitoring Systemsby Means of Pattern Recognition Techniques," IEEE 1980Pattern Recognition, pp. 116-120.
[34] Shiau, Y.R., and Jiang, B.C., 1991, "Determine a VisionSystem's 3D Coordinate Measurement Capability UsingTaguchi Method," International Journal of Production Research,Vol. 29, No. 6, pp. 1101-1122.
[35] Shiqu, Y.R., and Jiang, B.C., 1993, "A Methodolgy to EvaluateImprove the Performance of a Machine Vision System,"Internat-ional Journal of Production Research, Vol. 31,No. 6, pp. 1467-1478.
[36] G A H Al-Kindi, R M Baul and K F Gill, "ExperimentalEvaluation of 'Shape from Shading' for Engineering ComponentProfile Measurement", Proc Instn Mech Engrs, Vol.203, 1989.
[37] Hengzheng LU, Takashi MIYOSHI and Katsumasa SAITO,"Automatic Measurement of 3-D Object Shapes Based onComputer-generated Reference Surfaces", Bull. Japan Soc.of Prec. Engg., Vol. 21, No. 4, Dec., 1987.
[38] Shuzo HATTORI "An Automatic Super Accurate PositioningTechnique Using Moire Interferened"Bull. Japan Soc,of Pewx. Engg., Vol.20, NO. 2(June 1986)[39] 泰?科技股份有限公司，“ 影像處??，2007[40] 黃春融、詹寶珠，“ 由影像處?到電腦視覺?，《科學發展》2003 ?1 月，361 期，12 ~ 19 頁[41] 衛祖賞，"?位影像處?"，全華圖書，1982