

REFERENCES

- [1] P. Stavroulakis and M. Stamp, Handbook of Information and Communication Security, Springer Science & Business Media, 2010.
- [2] D. Maltoni, D. Maio, A. Jain and S. Prabhakar, Handbook of Fingerprint Recognition, Springer-Verlag London, 2009.
- [3] K. Ito, A. Morita, T. Aoki, T. Higuchi, H. Nakajima and K. Kobayashi, "A Fingerprint Recognition Algorithm Using Phase-Based Image Matching for Low-Quality Fingerprints," *Proc. IEEE International Conference on Image Processing*, pp. II-33 - II-36, 2005.
- [4] A. Jain, Y. Chen and M. Demirkus, "Pores and Ridges: Fingerprint Matching Using Level 3 Features," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, pp. 15-27, 2007.
- [5] R. K. Rowe, K. A. Nixon and P. W. Butler, "Multispectral Fingerprint Image Acquisition," in *Advances in Biometrics: Sensors, Algorithms and Systems*, London, Springer London, 2008, pp. 3-23.
- [6] N. Ratha and R. Bolle, Automatic Fingerprint Recognition s\Systems, New York: Springer Science & Business Media, 2007.
- [7] J. D. Foley and A. V. Dam, Fundamental of Interactive of Computer Graphics, Michigan: Addison-Wesley Pub. Co., 1982.
- [8] A. Almansa and T. Lindeberg, "Fingerprint Enhancement by Shape Adaptation of Scale-Space Operators with Automatic Scale Selection," *IEEE Transactions on Image Processing*, pp. 2027 - 2042, 2000.
- [9] S. Greenberg, M. Aladjem and D. Kogan, "Fingerprint Image Enhancement Using Filtering Techniques," *Real-Time Imaging*, pp. 227-236, 2002.
- [10] L. Hong, Y. Wan and A. Jain, "Fingerprint Image Enhancement: Algorithm and Performance Evaluation," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, pp. 777-789, 1998.
- [11] W. Kabir, "A New Three-Stage Scheme for Fingerprint Enhancement and its Impact on Fingerprint Recognition," pp. 1-113, 2013.
- [12] D. N. Bhargava, R. Bhargava, P. Narooka and M. Cotia, "Fingerprint Recognition Using Minutia Matching," *International Journal of Computer Trends and Technology*, vol. 3, pp. 641-643, 2012.

- [13] J. Yang, L. Liu, T. Jiang and Y. Fan, "A Modified Gabor Filter Design Method for Fingerprint Image Enhancement," *Pattern Recognition Letters*, vol. 24, no. 12, pp. 1805-1817, 2003.
- [14] B.-G. Kim, H.-J. Kim and D.-J. Park, "New Enhancement Algorithm for Fingerprint Images," *Pattern Recognition, 2002. Proceedings. 16th International Conference on IEEE*, vol. 3, pp. 879-882, 2002.
- [15] E. Zhu, J. Yin and G. Zhang, "Fingerprint Enhancement Using Circular Gabor Filter," *International Conference Image Analysis and Recognition*, pp. 750-758, 2004.
- [16] C.-T. Hsieh, E. Lai and Y.-C. Wang, "An Effective Algorithm for Fingerprint Image Enhancement Based on Wavelet Transform," *Elsevier Pattern Recognition*, vol. 36, no. 2, pp. 303-312, 2003.
- [17] Z. Sun, G. Bebis and R. Miller, "On-Road Vehicle Detection Using Evolutionary Gabor Filter Optimization," *IEEE Transactions on Intelligent Transportation Systems*, vol. 6, no. 2, pp. 125-137, 2005.
- [18] D.-H. Chen, L. Guo and H. Li, "Gabor Filter Enhancement Algorithm Based on Binarization Fingerprint Image," *Jisuanji Gongcheng yu Yingyong(Computer Engineering and Applications)*, vol. 42, no. 29, pp. 4-7, 2007.
- [19] E. Zhu, J. Yin, G. Zhang and C. Hu, "A Gabor Filter Based Fingerprint Enhancement Scheme Using Average Frequency," *International Journal of Pattern Recognition and Artificial Intelligence*, vol. 20, no. 3, pp. 417-429, 2006.
- [20] X. Chen and J. Feng, "Fast Gabor Filtering," *Acta Automatica Sinica*, vol. 33, no. 5, p. 456, 2007.
- [21] R. Thai, "Fingerprint Image Enhancement and Minutiae Extraction," *The University of Western Australia*, pp. 1-71, 2003.
- [22] R. Majeed, Z. Beiji and H. Hatem, "A Novel Hybrid Gabor Filter Based On Automatic Wavelet Selection With Application To Fingerprint Enhancement," *International Journal of Hybrid Information Technology*, vol. 4, no. 8, pp. 285-298, 2015.
- [23] J. S. Priyadarshini and D. Gladis, "An Empirical Study on Fingerprint Image Enhancement Using Filtering Techniques and Minutiae Extraction," *Proceedings of 2nd International Conference on Intelligent Computing and Applications*, vol. 467, pp. 231-239, 2017.
- [24] J. Yang and M. Yan, "An Improved Method for Finger-Vein Image Enhancement," *IEEE 10th International Conference On Signal Processing Proceedings*, pp. 1706--1709, 2010.

- [25] Q. Wei and Z. Weina, "Restoration of Motion-Blurred Star Image Based on Wiener Filter," *Intelligent Computation Technology and Automation (ICICTA), 2011 International Conference on IEEE*, vol. 2, pp. 691-694, 2011.
- [26] H. X. Fu, Y. C. Wang and X. Su, "Restoration of Motion Blurred Image Based on PSO Combine Wiener Filter in Ship Imaging System," *Trans Tech Publ Advanced Materials Research*, vol. 1006, pp. 739-742, 2014.
- [27] K. Kanagalakshmi and E. Chandra, "Performance Evaluation of Filters in Noise Removal of Fingerprint Image," *Electronics Computer Technology (ICECT), 2011 3rd International Conference on IEEE*, vol. 1, pp. 117-121, 2011.
- [28] B. Sherlock, D. Monro and K. Millard, "Fingerprint Enhancement by Directional Fourier Filtering," *IEE Proceedings-Vision, Image and Signal Processing*, vol. 141, no. 2, pp. 87-94, 1994.
- [29] S. Chikkerur, A. N. Cartwright and V. Govindaraju, "Fingerprint Enhancement Using STFT Analysis," *Elsevier Pattern Recognition*, vol. 40, pp. 198-211, 2007.
- [30] O. P. Chaurasia, "An Approach to Fingerprint Image Pre-Processing," *I.J. Image, Graphics and Signal Processing*, pp. 29-35, 2012.
- [31] M. Kucken and A. C. Newell, "Fingerprint Formation," *Journal of Theoretical Biology*, pp. 71-83, 2005.
- [32] . A. A. Moenssens, *Fingerprint techniques* / [by] Andre A. Moenssens, Philadelphia: Chilton Book Co., 1971.
- [33] I. G. Selia and D. L. Parthiban, "Approaches for Enhancing Fingerprint Images Using Filters: A Case Study," *ACS-International Journal in Computational Intelligence*, 2011.
- [34] P. Komarinski, *Automated Fingerprint Identification Systems (AFIS)*, Burlington: Academic Press, 2005.
- [35] Z. M. Win and M. M. Sein, "Texture Feature Based Fingerprint Recognition for Low Quality Images," *Micro-NanoMechatronics and Human Science (MHS), 2011 International Symposium on IEEE*, pp. 333-338, 2011.
- [36] M. W. Shalaby and M. O. Ahmad, "A Multilevel Structural Technique for Fingerprint Representation and Matching," *Signal Processing*, pp. 56-69, 2013.
- [37] F. Afsar, M. Arif and M. Hussain, "Fingerprint Identification and Verification System using Minutiae matching," *National Conference on Emerging Technologies*, pp. 141-146, 2004.
- [38] B. M. Mehtre, "Fingerprint Image Analysis for Automatic Identification," *Machine Vision and Applications*, pp. 124-139, 1993.

- [39] M. S. Helfroush and M. Mohammadpour, "Fingerprint Segmentation," in *Information and Communication Technologies: From Theory to Applications*, IEEE, 2008, pp. 1-5.
- [40] Z. Shi, Y. Wang, J. Qi and K. Xu, "A New Segmentation Algorithm for Low Quality Fingerprint Image," in *Image and Graphics (ICIG'04), Third International Conference on IEEE*, 2004, pp. 314-317.
- [41] E. Zhu, J. Yin, C. Hu and G. Zhang, "A Systematic Method for Fingerprint Ridge Orientation Estimation and Image Segmentation," *Pattern Recognition*, pp. 1452-1472, 2006.
- [42] C. Wu, S. Tulyakov and V. Govindaraju, "Robust point-based feature fingerprint segmentation algorithm," in *International Conference on Biometrics*, Berlin Heidelberg, Springer, 2007, pp. 1095-1103.
- [43] C. Gottschlich, P. Mihailescu and A. Munk, "Robust Orientation Field Estimation and Extrapolation Using Semilocal Line Sensors," *IEEE Transactions on Information Forensics and Security*, pp. 802-811, 2009.
- [44] P. Gnanasivam and S. Muttan, "An Efficient Algorithm for Fingerprint Preprocessing and Feature Extraction," *Procedia Computer Science*, pp. 133-142, 2010.
- [45] V. Kakkar, A. Sharma, T. Mangalam and P. Kar, "Fingerprint Image Enhancement Using Wavelet Transform And Gabor Filtering," *Acta Technica Napocensis*, pp. 17-25, 2011.
- [46] P. Deshmukh, S. Pathan and R. Pathan, "Image Enhancement Techniques for Fingerprint Identification," *Image*, p. 2, 2013.
- [47] S. Bana and D. D. Kaur, "Fingerprint Recognition Using Image Segmentation," *International Journal of Advanced Engineering Sciences and Technologies*, p. 1, 2011.
- [48] R. C. Gonzales and R. E. Woods, *Digital Image Processing (2nd Edition)*, New Jersey: Prentice Hall, 2002.
- [49] A. Saini, "Image Enhancement Techniques for Fingerprint Images," *International Journal of Emerging Trends & Technology in Computer Science (IJETTCS)*, pp. 215-217, 2012.
- [50] C. Srivastava, S. . K. Mishra, P. Asthana, G. Mishra and O. Singh, "Performance Comparison of Various Filters and Wavelet Transform for Image De-Noising," *IOSR Journal of Computer Engineering*, pp. 55-63, 2013.
- [51] M. Potmesil and I. Chakravarty, "Modeling Motion Blur in Computer-Generated Images," *ACM SIGGRAPH Computer Graphics*, pp. 389-399, 1983.

- [52] F. Krahmer, Y. Lin, B. McAdoo, K. Ott, J. Wang, D. Widemann and B. Wohlberg, "Blind Image Deconvolution: Motion Blur Estimation," *IMA Preprints Series Vol. 21*, pp. 33-35, 2006.
- [53] F. Jin, P. Fieguth, L. Winger and E. Jernigan, "Adaptive Wiener Filtering of Noisy Images and Image Sequences," in *Image Processing, 2003. ICIP 2003. Proceedings. 2003 International Conference on IEEE.*, IEEE, 2003, pp. 345-349.
- [54] Z. Wang, A. C. Bovik, H. R. Sheikh and E. P. Simoncelli, "Image Quality Assessment: From Error Visibility to Structural Similarity," *IEEE transactions on image processing*, vol. 13, no. 4, pp. 600-612, 2004.
- [55] C. I. Watson, M. Garris, E. Tabassi, C. L. Wilson, R. M. McCabe, S. Janet and K. Ko, "User's guide to NIST biometric image software (NBIS)," Citeseer, 2007.
- [56] C. I. Watson, M. D. Garris, E. Tabassi, C. L. Wilson, R. M. McCabe, S. Janet and K. Ko, "User's Guide to Export Controlled Distribution of NIST Biometric Image Software (NBIS-EC)," *NIST Interagency/Internal Report (NISTIR)-7391*, 2007.
- [57] G. T. Diefenderfer, "Fingerprint Recognition," DTIC Document , 2006.