image to improve the recall of the system. Futhermore, advanced identification of the obtained parasite candidates will be conduct to reduce false positives of the system result. So, it can improve the precision value.

ACKNOWLEDGMENT

Datasets of this research are supported by Eijkman Institute of Molecular Biology Indonesia and Miss. Esti Suryani. This research is a part of research collaboration among Universitas Sebelas Maret, Center for Information and Communication Technology Agency for the Assessment and Application of Technology (PTIK-BPPT), and Eijkman Institute for Molecular Biology.

REFERENCES

[1] WHO (2014) World Malaria Report 2014. [Online]. Available: http://www.who.int/malaria/publications/world_malaria_report_2014/en/

[2] I. Hammami, A. Garcia, and G. Nuel, "Evidence for overdispersion in the distribution of malaria parasites and leukocytes in thick blood smears," Malaria Journal, vol. 12, pp. 1–15, 2013.

[3] D. Syafruddin, P. B. Asih, I. E. Rozi, K. Chand, and S. Wangsamuda, Diagnosis mikroskopik malaria, 1st ed. Lembaga Biologi Molekuler Eijkman, 2010.

[4] WHO, Basic Malaria Microscopy, 2nd ed. Switzerland: WHO Press, 2010.

[5] N. Linder, R. Turkki, M. Williander, A. Mårtensson, V. Diwan, E. Rahtu, M. Pletikäinen, M. Lundin, J. Lundin, "A Malaria Diagnostic Tool Based on Computer Vision Screening and Visualization of Plasmodium falciparum Candidate Areas in Digitized Blood Smears," PLOS ONE, vol. 9, no. 8, pp. 1–12, 2014.

[6] D. Anggraini, A. S. Nugroho, C. Pratama, I. E. Rozi, V. Pragesjvara, and M. Gunawan, "Automated status identification of microscopic images obtained from malaria thin blood smears using bayes decision: A study case in plasmodium falciparum," in Proc. International Conference on Advanced Computer Science and Information Systems, 2011, pp. 347–352.

[7] D. K. Das, M. Ghosh, M. Pal, A. K. Maiti, and C. Chakraborty, "Machine learning approach for automated screening of malaria parasite using light microscopic images," Micron, vol. 45, pp. 97–106, 2013.

[8] E. Dekel, A. Rivkin, M. Heidenreich, Y. Nadav, Y. Ofir-Birin, Z. Porat, N. Regev-Rudzki, "Identification and classification of the malaria parasite blood developmental stages, using imaging flow cytometry," Methods, vol 112, pp. 157-166, 2016.

[9] G. Díaz, F. A. González, and E. Romero, "A semi-automatic method for quantification and classification of erythrocytes infected with malaria parasites in microscopic images," Journal of Biomedical Informatics, vol. 42, no. 2, pp. 296–307, 2009.

[10] Z. May and M. Aziz, "Automated quantification and classification of malaria parasites in thin blood smears," in Proc. International Conference on Signal and Image Processing Applications, 2013, pp. 369–373.

[11] M. I. Razzak, "Automatic Detection and Classification of Malarial Parasite," International Journal of Biometrics and Bioinformatics, vol. 9, pp. 1–12, 2015.

[12] S. S. Savkare and S. P. Narote, "Automatic System for Classification of Erythrocytes Infected," in Proc. 2nd International Conference on Communication, Computing & Security, 2012, vol. 6, pp. 405–410.

[13] V. V. Makkapati and R. M. Rao, "Ontology-based malaria parasite stage and species identification from peripheral blood smear images," in Proc. International Conference of the IEEE Engineering in Medicine and Biology Society, pp. 6138–6141, 2011.

[14] F. B. Tek, A. G. Dempster, and I. Kale, "Parasite detection and identification for automated thin blood film malaria diagnosis," Computer Vision and Image Understanding, vol. 114, pp. 21–32, 2010.

[15] K. Bhowmik and P. Rakshit, "Detection of the presence of Parasites in Human RBC In Case of Diagnosing Malaria," in Proc. Second International Conference on Image Information Processing, 2013, pp. 329–334.

[16] D. Mas, B. Ferrer, D. Cojoc, S. Finaurini, V. Mico, and J. Garcia, "Novel image processing approach to detect malaria," Optics Communications, vol. 350, pp. 13–18, 2015.

[17] M. Le, T. R. Bretschneider, C. Kuss, and P. R. Preiser, "A Novel semi-automatic image processing approach to Determine Plasmodium falciparum parasitemia in Giemsa-stained thin blood smears," BMC Cell Biology, vol. 12, pp. 1–12, 2008.

[18] S. Kaewkamnerd, A. Intarapanich, M. Pannarat, S. Chaotheing, C. Uthaipibull, and S. Tongsima, "Detection and Classification Device for Malaria Parasites in Thick-Blood Films," in Proc. The 6th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, 2011, pp. 435–438.

[19] M. Elter, E. Haßlmeyer, and T. Zerfaß, "Detection of malaria parasites in thick blood films," in Proc. 33rd Annual International Conference of the IEEE EMBS, 2011, pp. 5140–5144.

[20] J. E. Arco, J. M. Górriz, J. Ramírez, I. Álvarez, and C. G. Puntonet, "Digital image analysis for automatic enumeration of malaria parasites using morphological operations," Expert Systems with Applications, vol. 42, no. 6, pp. 3041–3047, 2015.

[21] J. Kaur and A. Choudhary, "Comparison of Several Contrast Stretching Techniques on Acute Leukemia Images," International Journal Engineering Innovation Technology, vol. 2, pp. 332–335, 2012.

[22] R. E. Putri, A. Yahya, N. M. Adam, and S. A. Aziz, "Correlation of Moisture Content to Selected Mechanical Properties of Rice Grain Sample," International Journal on Advanced Science, Engineering & Information Technology, vol. 5, no. 5, pp. 264–267, 2015.

[23] S. Y. Jiang and L. X. Wang, "Efficient feature selection based on correlation measure between continuous and discrete features," Information Processing Letters, vol. 116, no. 2, pp. 203–215, 2016.