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Malaria Detection using Deep Learning

Prof. Vanita Buradkar, Tejas Lingayat, Thomas Sangala, Sahil Sheikh, Swapnil Umare, Sumedh Chalkhure
Department of Computer Science & Engineering
Rajiv Gandhi College of Engineering, Research and Technology, Chandrapur, Maharashtra, India

Abstract: *Infectious disease malaria is a devastating infectious disease that claims the lives ofmore than 500,000 people worldwide every year. Most of these deaths occur as a result of a delayed or incorrect diagnosis. At the moment, the manual microscope is considered to be the most effective equipment for diagnosing malaria. It is, on the other hand, time-consuming and prone to human error. Because it is such a serious global health issue, it is important that the evaluation process be automated. The objective of this article is to advocate for the automation of the diagnosis process in order to eliminate the need for human intervention in the process. Convolutional neural networks (CNNs) and other deep-learning technologies, such as image processing, are being utilized to evaluate parasitemia in microscopic blood slides in order to enhance diagnostic accuracy. The approach is based on the intensity characteristics of Plasmodium parasites and erythrocytes, which are both known to be variable. Images of infected and noninfected erythrocytes are gathered and fed into the CNN models ResNet50, ResNet34, VGG-16, and VGG-19, which are all trained on the same dataset. The techniques of transfer learning and fine-tuning are employed, and the outcomes are contrasted. The VGG-19 model obtained the best overall performance given the parameters and dataset that were evaluated.*

Keywords: Convolutional neural networks

REFERENCES

[1]. WHO, World Malaria Report, Geneva World Heal. Organ, Geneva, Switzerland, 2017.
[2]. WHO, "WHO guidelines for malaria," p. 225, 2021, https://apps.who.int/iris/handle/10665/339609. View at: Google Scholar
[3]. R. Zemouri, N. Zerhouni, and D. Racoceanu, "Deep learning in the biomedical applications: recent and future status," Applied Sciences, vol. 9, no. 8, p. 1526, 2019. View at: Publisher Site | Google Scholar
[4]. I. Tobore, J. Li, L. Yuhang et al., "Deep learning intervention for health care challenges: some biomedical domain considerations," JMIR mHealth and uHealth, vol. 7, no. 8, Article ID e11966, 2019. View at: Publisher Site | Google Scholar
[5]. K. Suzuki, "Overview of deep learning in medical imaging," Radiological Physics and Technology, vol. 10, no. 3, pp. 257–273, 2017. View at: Publisher Site | Google Scholar
[6]. N. Tavakoli, M. Karimi, A. Norouzi, N. Karimi, S. Samavi, and S. M. R. Soroushmehr, "Detection of abnormalities in mammograms using deep features," Journal of Ambient Intelligence and Humanized Computing, vol. 1-13, 2019. View at: Publisher Site | Google Scholar
[7]. R. Dinesh Jackson Samuel and B. Rajesh Kanna, "Tuberculosis (TB) detection system using deep neural networks," Neural Computing and Applications, vol. 31, no. 5, pp. 1533–1545, 2019. View at: Publisher Site | Google Scholar
[8]. R. Sivaramakrishnan, S. Antani, Z. Xue, S. Candemir, S. Jaeger, and G. R. Thoma, "Visualizing Abnormalities in Chest Radiographs through Salient Network Activations in Deep Learning," in Proceedings of the 2017 IEEE Life Sciences Conference (LSC), pp. 71–74, Sydney, NSW, Australia, December 2017. View at: Publisher Site | Google Scholar
[9]. J. Hung and A. Carpenter, "Applying faster R-CNN for object detection on malaria images," in Proceedings of the 2017 IEEE Comput. Soc. Conf. Comput. Vis. Pattern Recognit. Work, pp. 1–7, Honolulu, HI, USA, July 2017. View at: Publisher Site | Google Scholar

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