

Title: Peripheral Blood Smear Image-Based Blood Cancer Detection Using Transfer Learning

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Abstract: The lymphatic, bone marrow, and blood systems are all affected by hematological malignancy, also known as blood cancer. Early detection is essential for improved blood medical care and better patient outcomes. In the recent past, deep learning algorithms have developed as useful tools for the analysis and diagnosis of medical images. Deep learning algorithms are used in this study to introduce a cutting-edge technique for identifying blood cancer. Our method involves training a convolutional neural network (CNN) with a large dataset of blood cell data to identify the presence of cancerous cells. We compare our CNN-based approach's effectiveness with some other CNN-based approaches and demonstrate that it is more effective at detecting blood cancer. We used a variety of preprocessing techniques to provide highly trainable data for our algorithms in order to do this. Five CNN-based algorithms—VGG-19, VGG-16, MobileNet, InceptionV3, and ResNet50—as well as healthy and fragmented data are used in this study. With an accuracy of 95%, ResNet50 achieved the highest accuracy. Our study's results suggest that deep learning algorithms could be helpful in detecting blood cancer early, leading to a more precise diagnosis and course of treatment for this fatal condition.

Keywords: Blood cancer, Lymphatic, Bone marrow, Peripheral Blood Smear (PBS) image, VGG-19, ResNet50

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