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**Leukemia Diagnosis Using Deep Learning**

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Abstract:

Leukemia is a fatal cancer and has two main types: Acute and chronic. Each type has two more subtypes: Lymphoid and myeloid. Hence, in total, there are four subtypes of leukemia. In this project we propose a new approach for diagnosis of all subtypes of leukemia from microscopic blood cell images using convolutional neural networks (CNN), which requires a large training data set. Along with using CNN ,we will also be implementing a technique known as K-Fold Cross Optimization which helps in increasing the efficiency and accuracy of the model. We will design a CNN architecture capable of recognizing all subtypes of leukemia. Besides, we are also going to explore other well-known machine learning algorithms such as naive Bayes, support vector machine, k-nearest neighbour, and decision tree. To evaluate our approach, we will set up a set of experiments and use 5-fold cross-validation. The results that we are aiming to obtain from this project is to gain a maximum accuracy of 93% or more. Finally, we will also show that the CNN model that we have used has a better performance than other well-known machine learning algorithms.

**Keywords**: Leukemia Disease , Convolution Neural Network (CNN) , Feature extraction , Image processing , segmentation , classification, K-Fold cross Optimization.

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