

Advanced Blood Cell Classification Using Transfer Learning

1. Project Overview

This project aims to classify different types of blood cells using transfer learning techniques. The classification assists in medical diagnosis by identifying abnormal cell types accurately and efficiently. Deep learning models such as ResNet50 or InceptionV3 are fine-tuned to perform on blood cell images.

2. Dataset Used

The dataset contains microscopic images of various blood cell types, including lymphocytes, monocytes, eosinophils, and neutrophils. The data is preprocessed to ensure uniform size and normalized for effective training.

3. Tools and Technologies

- Programming Language: Python
- Libraries: TensorFlow, Keras, OpenCV, Matplotlib
- Transfer Learning Models: ResNet50, VGG16

4. Results Summary

The final model achieved an accuracy of over 90% on the test dataset. The confusion matrix and classification report indicate high precision and recall across most classes, demonstrating the effectiveness of the approach.

5. Conclusion

Transfer learning proves to be a robust approach for medical image classification tasks. This project lays the foundation for future work in real-time diagnostics and mobile health applications.