Malaria Detection using Deep learning

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Abstract: *This project focuses on the development of an automated malaria detection system using deep learning techniques. Convolutional Neural Network (CNN) architectures—VGG16, VGG19, and ResNet-50—were implemented and evaluated on the publicly available Malaria Cell Images dataset from Kaggle. To enhance model robustness, data augmentation techniques were applied during preprocessing. The models were assessed based on key performance metrics such as accuracy, precision, and recall. Among the models, VGG16 achieved the highest accuracy (95.22%) and demonstrated strong precision (0.91) and recall (0.95), making it the most effective model for this task. For real-world applicability, the VGG16 model was deployed as a web-based diagnostic tool using the Flask framework. The application allows medical professionals to upload cell images for rapid and accurate classification as infected or uninfected. Additional features such as image preprocessing, interpretability via heatmap visualizations, and secure access controls were incorporated to enhance usability, explainability, and data security. The successful deployment of this system demonstrates the potential of CNN-based models in supporting early and reliable malaria diagnosis, particularly in resource-limited healthcare settings*

Keywords: Flutter, Firestore SDK, Cross-Platform Application, Task Management System, Wedding Planning