Artificial Intelligence in Diagnostics: An Exploration of AI Applications within Resource-Limited Healthcare Settings in Malawi

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Abstract

The prevalence of infectious diseases in Malawi is significant, necessitating efficient diagnostic tools that can operate within limited healthcare resources. A machine learning algorithm was trained with data from low-resource clinics in Malawi. The model's performance was evaluated against traditional diagnostic methods. The AI model achieved a sensitivity of 85% (95% CI: 78-92%) and specificity of 90% when diagnosing malaria, outperforming existing diagnostic tools by 10% in both categories. This study demonstrates the potential of AI for enhancing disease diagnosis in resource-limited healthcare settings in Malawi, with a particular focus on malaria detection. Further research should be conducted to validate these findings across different geographic regions and health systems, aiming to integrate AI diagnostics into routine clinical practice. AI, Machine Learning, Disease Diagnosis, Resource-Limited Settings, Malaria Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, machine learning, data mining, resource allocation, healthcare informatics, predictive analytics, telemedicine*

ABSTRACT-ONLY PUBLICATION

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