Replication Study on AI Diagnostics in Malawi's Resource-Limited Settings

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Abstract

This study addresses a current research gap in Computer Science concerning AI Applications for Disease Diagnosis in Resource-Limited Healthcare Settings in Malawi in Malawi. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. AI Applications for Disease Diagnosis in Resource-Limited Healthcare Settings in Malawi, Malawi, Africa, Computer Science, replication study This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} \, sumi \, ell(yi, f\theta(\xi)) + \lambda lVert\theta rVert \, 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, Africa, Machine, Learning, Multicriteria, Evaluation, Contextual, Data, Fusion*

ABSTRACT-ONLY PUBLICATION

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