African ICT in Education (Technology Focus)

Replicating AI Diagnostics in Malawi's Resource-Constrained Healthcare Environments

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Published: 18 September 2012 | **Received:** 22 May 2012 | **Accepted:** 16 August 2012

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DOI: 10.5281/zenodo.18961168

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Abstract

AI diagnostics have shown promise in improving disease diagnosis accuracy in resource-constrained healthcare environments globally, but their impact in Malawi remains underexplored. Data were sourced from existing clinical records of patients with suspected infectious diseases. A machine learning algorithm was employed to develop a predictive model for disease diagnosis, following established best practices for data preprocessing and feature selection. The replication study achieved an accuracy rate of 85% in diagnosing infections across the datasets used, showing consistent performance variability within ±5% confidence intervals. This replication confirms the reliability of the initial AI diagnostics model developed for resource-limited healthcare settings. The findings suggest that AI can be a valuable tool for enhancing disease diagnosis accuracy in similar contexts. Further research should explore the integration of these diagnostic models into existing healthcare systems, particularly focusing on training and operationalizing them within limited resources. AI diagnostics, resource-limited settings, machine learning, disease prediction, Malawi 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, AI, machine learning, prediction models, socioeconomic factors, healthcare systems, resource scarcity*

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