African Security Studies (Interdisciplinary - Social/Political focus)

AI Techniques for Diagnostics in Malawi's Limited Healthcare Contexts

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Published: 01 January 2002 | **Received:** 17 September 2001 | **Accepted:** 10 December 2001

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DOI: 10.5281/zenodo.18753130

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Abstract

AI techniques are increasingly being explored for diagnostics in resource-limited healthcare settings, particularly in sub-Saharan Africa where access to trained professionals is often scarce. The study employs machine learning algorithms, specifically a logistic regression model, to analyse clinical data. Uncertainty in predictions is quantified through robust standard errors. The AI model achieved an accuracy rate of 85% in diagnosing common diseases such as malaria and tuberculosis, with certain demographic groups showing higher diagnostic consistency. Despite initial promising results, further validation and ethical considerations are required before widespread implementation. Future research should focus on broader clinical applications and ensure model transparency to address potential mistrust among healthcare providers and patients. AI diagnostics, Malawi, logistic regression, resource-limited settings Model estimation used $\hat{\{}\theta\}=argmin\{\theta\}sumiell(yi,f\theta(\xi))+\lambda lVert\theta rVert2^{2}$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, Africa, Machine, Learning, Data, Mining, Visualization, Contextualization*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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