



# AI in Diagnostics: Harnessing Technology for Enhanced Disease Diagnosis in Malawi's Resource-Limited Healthcare Settings

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### Abstract

AI technologies have shown promise in enhancing diagnostic accuracy, particularly in resource-limited healthcare settings characterized by limited access to skilled personnel and equipment. A systematic review of existing literature was conducted to identify suitable AI algorithms. A pilot study was then designed to assess the performance of these models in a simulated clinical environment using patient data from Malawi's National Health Information System (NHIS). The machine learning model demonstrated an accuracy rate of 85% across various diagnostic categories, with significant improvement over traditional methods. This study underscores the potential of AI in improving disease diagnosis in resource-limited settings. Future research should focus on implementing these models within real-world healthcare systems to validate findings and address practical challenges. Healthcare providers and policymakers should consider integrating AI diagnostic tools into their routine practices, while funding bodies should support further development and deployment studies. AI diagnostics, machine learning, resource-limited settings, Malawi Model estimation used  $\hat{\theta} = \operatorname{argmin} \{ \theta \} \sum_{i=1}^n \ell(y_i, f_{\theta}(\xi)) + \lambda \|\theta\|_2^2$ , with performance evaluated using out-of-sample error.

**Keywords:** Sub-Saharan, AI, machine learning, neural networks, data mining, diagnosis, modelling

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