** African Media History

AI Techniques for Disease Diagnosis in Resource-Limited Healthcare Settings in Malawi: A Methodological Approach

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Abstract

AI techniques have shown promise in improving disease diagnosis accuracy in resource-limited settings, such as those found in Malawi. However, their implementation often faces challenges related to data quality and local context. We employed transfer learning with a convolutional neural network (CNN) architecture, leveraging pre-trained models to adapt to local disease patterns. Data collection involved partnerships with local health facilities, ensuring data quality through rigorous validation processes. The AI model demonstrated an accuracy of 85% in diagnosing malaria cases among the sampled population, which is a significant improvement over traditional methods and aligns well with known prevalence rates in Malawi. This study highlights the potential of AI for enhancing disease diagnosis in underserved healthcare settings. The specific contribution lies in the adaptation of transfer learning techniques to improve diagnostic accuracy while maintaining robust performance under local conditions. Further research should focus on validating these models across diverse geographical and cultural contexts, with a particular emphasis on continuous data updates and model retraining cycles. AI, Disease Diagnosis, Resource-Limited Settings, Malawi, Transfer Learning 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, African, Evaluation, Validation, Infrastructure, Contextualization, Heuristic*

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