African Diplomacy and International Affairs (Political Science focus)

Indigenous Knowledge Integration into AI Development Framework in West Africa

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Published: 03 July 2007 | **Received:** 30 April 2007 | **Accepted:** 30 May 2007

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DOI: 10.5281/zenodo.18856381

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Abstract

This study addresses a current research gap in Computer Science concerning Integrating Indigenous Knowledge Systems into AI Development in West Africa in South Africa. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A mixed-methods design was used, combining survey and interview data collected over the study period. 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. Integrating Indigenous Knowledge Systems into AI Development in West Africa, South Africa, Africa, Computer Science, original research This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. 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: *African geography, Indigenous knowledge, AI development, Cultural integration, Soft computing, Ethnocomputing, Cognitive informatics*

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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