African Journal of Energy Systems and Sustainable Technologies

Integrating Indigenous Knowledge Systems into AI Development in West Africa: A Methodological Approach

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Published: 02 July 2013 | **Received:** 26 April 2013 | **Accepted:** 05 June 2013

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DOI: 10.5281/zenodo.18993397

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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 Republic of Congo. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured analytical approach was used, integrating formal modelling with domain evidence. 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, Republic of Congo, Africa, Computer Science, methodology paper This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, GIS, ethnography, ontology, participatory design, computational anthropology, epistemology*

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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