African Informatics Studies (LIS Focus)

# Indigenous Knowledge Systems Integration into AI Development in Ghana: A West African Perspective

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## Abstract

Indigenous Knowledge Systems (IKS) in Ghana encompass traditional practices, beliefs, and knowledge systems that have been passed down through generations. These systems are integral to the cultural fabric of the region but often lack formal recognition or integration into modern technological advancements. The research methodology involves a mixed-methods approach comprising surveys, interviews with practitioners, and case studies of existing AI projects in Ghana. Data analysis will employ thematic coding to identify commonalities between IKS and current AI applications. A preliminary survey revealed that 75% of respondents believe traditional knowledge could significantly enhance AI solutions for agriculture. Further thematic analysis identified four key themes: agricultural forecasting, medicinal efficacy assessment, cultural heritage preservation, and sustainable development strategies. The integration of IKS into AI in Ghana presents a promising avenue for leveraging local expertise to address pressing socio-economic challenges while maintaining cultural integrity. Developing culturally sensitive AI models requires collaboration between technologists, anthropologists, and community leaders. Establishing training programmes for AI developers on integrating traditional knowledge is recommended. 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, machine learning, cognitive anthropology*

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