



Indigenous Knowledge Systems and AI Development in Ghana: A Synthesis Approach

Amoako Twumasi^{1,2}, Boakai Dansu^{2,3}, Yamoah Gyamfi^{3,4}, Kwai Asare²

¹ Department of Artificial Intelligence, University of Cape Coast

² Ashesi University

³ University of Professional Studies, Accra (UPSA)

⁴ Department of Cybersecurity, Ashesi University

Published: 14 March 2004 | **Received:** 27 November 2003 | **Accepted:** 03 February 2004

Correspondence: atwumasi@outlook.com

DOI: [10.5281/zenodo.18799759](https://doi.org/10.5281/zenodo.18799759)

Author notes

Amoako Twumasi is affiliated with Department of Artificial Intelligence, University of Cape Coast and focuses on Computer Science research in Africa.

Boakai Dansu is affiliated with Ashesi University and focuses on Computer Science research in Africa.

Yamoah Gyamfi is affiliated with Department of Cybersecurity, Ashesi University and focuses on Computer Science research in Africa.

Kwai Asare is affiliated with Ashesi University and focuses on Computer Science research in Africa.

Abstract

Indigenous Knowledge Systems (IKS) in Ghana encompass a rich tapestry of traditional practices and beliefs that have evolved over centuries. These systems are deeply intertwined with local environment, social structures, and cultural values. A synthesis approach was employed, combining qualitative interviews with stakeholders representing various sectors of society to understand current AI practices and their integration potential with IKS. Interviews revealed that approximately 60% of participants perceived a need for more culturally-sensitive applications in AI, indicating a significant opportunity for innovation. While preliminary, the findings suggest that integrating IKS could lead to more socially acceptable and sustainable AI solutions in Ghana. Future research should focus on developing prototype AI systems incorporating IKS principles and validating these through user acceptance studies. Model estimation used $\hat{\theta} = \underset{\theta}{\operatorname{argmin}} \sum_{i=1}^n (y_i - f(\theta(\xi)))^2 + \lambda \|\theta\|_2^2$, with performance evaluated using out-of-sample error.

Keywords: *African geography, Synthesis approach, Indigenous knowledge systems, Cultural integration, Machine learning methodologies*

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

✉ **REQUEST FULL PAPER**

Email: info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

Submit at: app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge