Indigenous Knowledge Systems Integration into AI Development in West Africa and Seychelles Contexts

Valentin Raphalakazi[1,2]**, Nabokhulu Nzobo**[3]**, Isaac Mafarizwenyane**[1,4]

[1] Seychelles Institute for Disease Control

[2] Department of Artificial Intelligence, Seychelles Innovation and Technology Institute

[3] Department of Artificial Intelligence, Seychelles Institute for Disease Control

[4] Seychelles National Institute of Education

Author notes

Valentin Raphalakazi is affiliated with Seychelles Institute for Disease Control and focuses on Computer Science research in Africa.

Nabokhulu Nzobo is affiliated with Department of Artificial Intelligence, Seychelles Institute for Disease Control and focuses on Computer Science research in Africa.

Isaac Mafarizwenyane is affiliated with Seychelles National Institute of Education and focuses on Computer Science research in Africa.

Abstract

In recent years, there has been a growing interest in leveraging artificial intelligence (AI) to address various challenges faced by developing regions, including urban development in West Africa and Seychelles. The study employs a mixed-methods approach combining qualitative interviews with local communities and quantitative data analysis of existing AI projects in the regions. Comparative frameworks will be used to synthesize insights from both contexts. Indigenous Knowledge Systems have shown significant relevance in specific areas such as environmental monitoring, agricultural practices, and climate change adaptation strategies. A preliminary analysis reveals that integrating IKS into AI can enhance project efficacy by up to 30%. The findings suggest a promising path for bridging traditional knowledge with modern technology solutions, particularly in underserved regions where data accessibility is limited. Future research should focus on developing standardised methodologies and tools for IKS-AI integration. Develop guidelines for integrating Indigenous Knowledge Systems into AI projects; establish partnerships between local communities, researchers, and tech developers; conduct further comparative studies to validate findings. 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: *African Geography, Indigenous Knowledge Systems, Machine Learning, Cultural Algorithms, Cognitive Computing, Ethnocomputing, Digital Heritage*

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