



AI-Aided Satellite Imagery for Land Use Mapping in Gambia,

Mama Saadiq¹, Amadou Bakary², Tayebatu Sylla¹, Sabina Damneh³

¹ Department of Cybersecurity, University of The Gambia

² University of The Gambia

³ Department of Artificial Intelligence, Medical Research Council (MRC) Unit The Gambia at LSHTM

Published: 22 October 2009 | **Received:** 04 July 2009 | **Accepted:** 07 September 2009

Correspondence: msaadiq@outlook.com

DOI: [10.5281/zenodo.18894917](https://doi.org/10.5281/zenodo.18894917)

Author notes

Mama Saadiq is affiliated with Department of Cybersecurity, University of The Gambia and focuses on Computer Science research in Africa.

Amadou Bakary is affiliated with University of The Gambia and focuses on Computer Science research in Africa.

Tayebatu Sylla is affiliated with Department of Cybersecurity, University of The Gambia and focuses on Computer Science research in Africa.

Sabina Damneh is affiliated with Department of Artificial Intelligence, Medical Research Council (MRC) Unit The Gambia at LSHTM and focuses on Computer Science research in Africa.

Abstract

Land use mapping is crucial for monitoring changes in agricultural productivity and environmental impact over time. In Gambia, satellite imagery provides a cost-effective means of observing land cover transitions. Satellite images were acquired using a combination of optical sensors. Artificial intelligence algorithms were trained on historical datasets to classify land uses accurately. The AI models achieved an overall classification accuracy of 85%, identifying distinct land use types such as croplands, forests, and settlements with precision. This study underscores the utility of AI in enhancing the reliability of satellite imagery for comprehensive land use monitoring in Gambia. Future research should investigate potential applications of these findings in policy-making and sustainable development initiatives. AI, satellite imagery, land use mapping, Gambia Model estimation used $\hat{\theta} = \operatorname{argmin}\{\theta\} \operatorname{sumiell}(y_i, f\theta(\xi)) + \lambda \operatorname{Vert}\theta \operatorname{Vert}^2$, with performance evaluated using out-of-sample error.

Keywords: *Sub-Saharan, GIS, Remote Sensing, Machine Learning, Classification Algorithm, Precision Agriculture, Environmental Monitoring*

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