African Political Communication (Media/Politics/Social)

AI-Enhanced Satellite Imagery in Land Use Mapping and Monitoring in Malawi: A Comparative Study

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Abstract

Recent advancements in AI have enabled more accurate land use mapping through satellite imagery, offering insights into agricultural productivity and environmental conservation. A comparative analysis was conducted using historical satellite data from to . The study employed machine learning algorithms to classify land cover types and track changes over time. The AI models achieved an accuracy rate of 87% in classifying land use categories, with significant reductions in error rates compared to traditional methods ($p < 0.05$). AI-enhanced satellite imagery demonstrated superior precision and efficiency in monitoring Malawi's land use dynamics. Further research should explore the integration of AI into policy-making frameworks for sustainable land management. AI, Satellite Imagery, Land Use Monitoring, Machine Learning, Agricultural Productivity 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: *Geographic, Malawi, Mapping, Monitoring, Artificial Intelligence, Machine Learning, Remote Sensing*

ABSTRACT-ONLY PUBLICATION

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