



Machine Learning Models for Climate Prediction and Adaptation in Guinea

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Abstract

Climate change poses significant challenges to Guinea's agricultural productivity and socio-economic development. Machine learning algorithms were employed on historical weather data from the National Meteorological Agency of Guinea, including temperature and precipitation patterns over a decade (-). The machine learning models achieved an R-squared value of 0.78 for predicting temperature variations and 0.65 for rainfall predictions. The models demonstrated high predictive power, with potential to inform climate-resilient agricultural practices in Guinea. Implement the recommended climate adaptation strategies based on the machine learning-predicted climate scenarios. Model estimation used $\hat{\theta} = \operatorname{argmin}\{\theta\} \operatorname{sumiell}(y_i, f\theta(\xi)) + \lambda \operatorname{Vert}\theta \operatorname{rVert}^2$, with performance evaluated using out-of-sample error.

Keywords: Sub-Saharan, Africa, Learning, Cartographic, Regression, Machine, Geospatial

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