Big Data Analytics Framework for Urban Planning and Service Delivery in Cairo, Egypt 2010

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Abstract

Urban planning in Cairo, Egypt requires effective data management to address growing challenges such as population growth and resource scarcity. The framework employs a combination of machine learning algorithms (e.g., Random Forest) to analyse spatial-temporal patterns from multiple sources. Uncertainty is addressed through cross-validation techniques with robust standard errors. Analysis revealed significant correlations between population density and waste management efficiency, suggesting an optimal deployment ratio for collection vehicles. The framework enhances urban planning by providing actionable insights into resource allocation and service delivery strategies. Implement the framework to improve urban management practices and ensure sustainable development in Cairo. Urban Planning, Big Data Analytics, Machine Learning, City Management 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: *Geographical Information Systems (GIS), Urban Informatics, Data Mining, Spatial Analysis, Geographic Profiling, Predictive Analytics, Network Theory*

ABSTRACT-ONLY PUBLICATION

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

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