Developing Low-Cost IoT Architectures for Urban Slum Environmental Monitoring in Burkina Faso, 2004

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Abstract

Urban slums in developing countries often face challenges in environmental monitoring due to limited resources and infrastructure. A mixed-method approach was employed, combining qualitative interviews with IoT device testing in a selected slum. Devices could be deployed at a rate of 10 per household, ensuring widespread coverage without significant financial strain. The developed architecture supports real-time data collection and transmission to a central server for analysis. Future research should focus on scalability and integration with existing municipal systems. IoT, slums, environmental monitoring, Burkina Faso 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: *Sub-Saharan, IoT, Sensor Networks, Wireless Communication, Data Analytics, Sustainability, Geographic Information Systems*

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