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Integrating AI Systems for Urban Waste Segregation and Disaster Mitigation

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Waste management in Sri Lanka poses significant challenges due to rapid urbanization, population growth, and inadequate infrastructure. As waste continues to pile up, the country faces severe recycling issues, leading to environmental pollution and health hazards. A key solution to this problem lies in effective waste segregation, which can streamline recycling processes and reduce waste management inefficiencies. This study proposes a solution by developing a Convolutional Neural Network (CNN) for real-time waste segregation, categorizing waste into types such as paper, plastic, metal, and food. The methodology includes data collection from Kaggle, a platform known for its rich datasets and competitive machine learning challenges. Annotation were done using CVAT, and CNN model training. The model demonstrates high accuracy in classifying waste, suggesting that AI-driven segregation can significantly improve waste management practices in Sri Lanka. The conclusion highlights the potential of integrating AI systems to not only address current waste management challenges but also to pave the way for more sustainable urban development.

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