

A Review of Artificial Intelligence Application of Sustainable Solid Waste Management Practices in Western Asia

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Abstract

Municipal solid waste management has become a very active and burgeoning area of research as it's an essential aspect of a more sustainable environment and a circular economy. Over the past few years, Machine-learning algorithms and Artificial intelligence models have demonstrated great ability to optimize and automate critical solid waste and waste management complications. Additionally, by providing automated model-assisted aid to complex issues surrounding the waste collection and it's chemical/biological characteristics, artificial intelligence, and machine learning applications are anticipated to further optimize resource recovery (reusing, recycling, and extracting energy from waste) and decrease capital expenses. This review examines the applications of AI and ML technologies in various areas of SWM including generation, sorting, collection, vehicle routing, treatment, disposal, and waste management planning in the past 10 years to enhance sustainable waste management practices in Asia. This study has proven that AI-based models have better prediction abilities when compared to conventional methods used in forecasting solid waste generation and recycling.

Keywords: Artificial intelligence, Machine learning, Deep learning, Neural networks, Solid waste, Sustainable waste management

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