DEEP LEARNING APPROACH IN CLASSIFYING BIODEGRADABLE & NON-BIODEGRADABLE WASTE USING CONVOLUTIONAL NEURAL NETWORK

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Abstract

Waste management places a vital role in a Smart city and Clean India mission that can be achieved by separating the solid waste into two medium and make use of those waste effectively for recycling and energy production. In manual, the separation of waste into two different mediums will be a risky task. To overcome this problem while throwing a waste into a dustbin, the image captured and compared with the dataset which will predict the medium (recycle or generate energy) of the waste. As per medium the waste will be collected automatically in two different separations with in a dustbin. The separated Biodegradable waste can be generated into energy by using Bio-Methanation Plant. The sensor placed in the dustbin will predict the level and intimate to the municipality before overflowing through Android application. The goal of this research is to reduce the percentage of waste that ends up in landfills should be less than 5 % which can save the overall ecosystem and environment from pollution.

Keywords: Biodegradable, Non-Biodegradable, TensorFlow, Image Classification, Bio-Methanation Plant

1. INTRODUCTION

The waste management challenge faced by the country due to rapid urbanization is indeed significant. With over 377 million urban people living in 7,935 towns and cities, the generation of 62 million tonnes of municipal solid waste per year is a considerable amount. However, the current waste management practices are inadequate, as only 43 million tonnes of waste are collected, 11.9 million tonnes are treated, and a staggering 31 million tonnes are dumped in landfill sites. All collected wastes can be used almost 99% in an effective manner without ends up in landfills. This can be achieved by separating the waste into two different mediums as recycle and energy generated. This research is focused on this area to make India as a success in Smart City mission and Clean India. In this connection, the study area Coimbatore is agriculture-based area surrounded by coconut groves. This city is located very near to one of the important hotspot, Western Ghats. Hence the solid waste management may also protect the Western Ghats and its forest types responsible for receiving south west monsoon. The management activity performed on solid waste management will safe guard the environment in a healthy way. This research is focused on this area to make India as a success in Clean India under Smart City mission.