Poster ID :

533R

Waste Management using Machine Learning

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Abstract

Waste management is one of the primary problems that the world faces irrespective of the case of a developed or developing country. The critical issue in waste management is that the garbage bin at public places gets over flowed well in advance before the commencement of the next cleaning process. The segregation of waste is entirely done by manual laborers, which is less efficient, time-consuming, and not wholly feasible due to a large amount of waste. So we are proposing an automated waste classification system using Machine Learning algorithms.

INTRODUCTION

Waste classification process leads to recycling of waste, energy generation out of waste, reduction of waste and lessening of landfills. And due to not managing of waste properly, it hampers our environment by soil contamination, air pollution and water pollution. So this research aims to implement few machine learning models to find the best suitable algorithm to classify waste into categories.

Problem Statement

The Generation of waste has increased dramatically in recent time. If waste is not disposed properly, they can have a detrimental effect on the environment. The sorting of waste should be done at the earliest stage possible, in order to maximize the amount of recyclable items and reduce the possibility of being contaminated by other items.

Research Question and Hypothesis

1. What are the categories for segregation in this research?

2. What are the key features determining correct object?

By using classification algorithms, the model will help in understanding how the object can vary from each other depending on various factors. And then considering all the factors, the model will predict the accuracy of how likely an object will match with the trained sample.

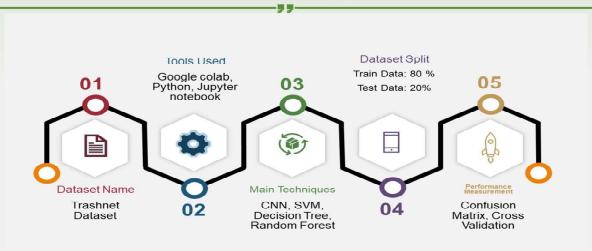
Research Objectives

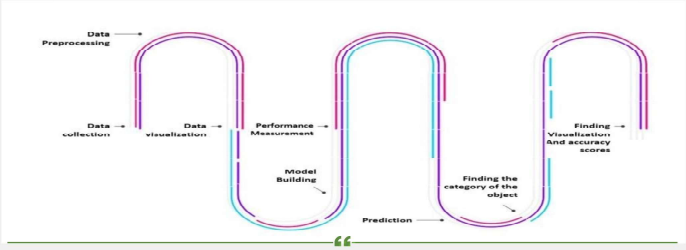
To explore the dataset
To visualize and find incorrect images
Build the best model for each algorithms and sort them according to the classes.
Analysis the accuracy and find the suitable model for classification

Research Significance:

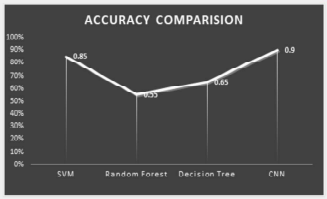
The world generates 1.3 billion tons of municipal solid waste each year, according to the World Bank and that figure is expected to hit 2.2 Billion tons by 2025. So, the implementation of AI and Machine Learning can bring a good solution to deal with this great problem and to keep our environment a better place for all to live in.

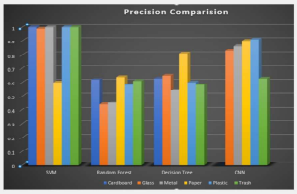
Methodology

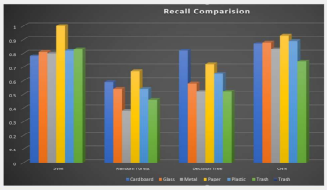


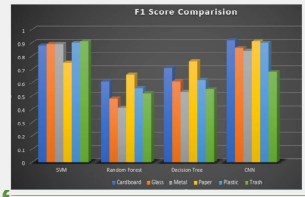


Preliminary Result Analysis









Future Works

1. Working with the best algorithm selected from FYP 1 and enhance the accuracy.
2. Working with bigger dataset.
3. Will try to make a demo app in mobile platform.

References

[1] Ali.W.Hadi, George E. Sakr & Maria Mokbel(2016). Comparing Deep Learning And Support Vector Machines for Autonomous Waste Sorting, 1-6.
[2] Gary Thung & Mindy Yang(2016). Classification of Trash for recyclability Stataus,1-6.
[3] Olugboja Adedeji & Zenghuni Wang(2019). Intelligent Waste Classification Using Deep Learning Convolutional Neural Network. 607-608.

KICT FYP SHOWCASE
SEM 2, 2019/2020

FYP 1
BCS