A COMPARATIVE STUDY OF DEEP LEARNING FRAMEWORKS TO IDENTIFY WASTE PARTICLES IN AN AUTONOMOUS OUTDOOR CLEANING ROBOT

July 23, 2018

Abstract

This project presents a new object identification method using Deep Learning frameworks. A comparative study of object classification using Keras model and YOLO mark detection methods. The objectives of the work is to identify the waste particles such as plastic covers, waste papers, leafs etc for the functioning of an outdoor cleaning robot. Introduction of visual system into the cleaning robot is to optimize the power consumption during the cleaning process. Two different methods of classifying waste particles and obstacles are introduced in this work based on visual identification. The Deep Learning based classification is one of the challenging application in computer vision. Initially Keras model with Tensorflow backend are used for executing the model on the basis of Convolutional Neural Network with a good accuracy prediction system. YOLO object detection method can also provide location information of object presents in the input images as compared to Keras based method. Both methods are trained using deep learning frameworks. Eventhough the training process using YOLO bounding box is time consuming, the accuracy obtained for YOLO based classification is very high.

Guided By
Dr. Sreeni K G
Assistant Professor
Department of ECE
CET, Trivandrum

Submitted By
Mohammed Raheem .P
Robotics and Automation
Reg No: TVE16ECRA15
CET, Trivandrum