2ⁿᵈ International Conference on Innovations in Mechanical and Civil Engineering

(18ᵗʰ and 19ᵗʰ August 2023)

Jointly Organized by
Department of Mechanical Engineering and
Department of Civil Engineering
Pimpri Chinchwad College of Engineering, Pune
411 044 (INDIA)

i-MACE 2023

Conference Theme: "GREEN & SMART Systems"

Go-Green Regularly by Energy Efficient Novelties with Sustainable and Modern Alternative materials to Reuse/Reduce/Recycle and improve the Technology.

Conference Topics

Code	Topic	Code	Topic
M1	Modelling, Simulation & Optimization Techniques	M8	Industry 4.0
M2	Smart Materials	M9	Mobility, Inter-Disciplinary and Other Emerging Topics
M3	Biomedical Engineering & Technology	C1	Waste and Water Management plans for Sustainable Environment
M4	Thermal and Fluid Engineering	C2	Smart Cities and Construction Technologies,
M5	Alternative and Renewable Energy	C3	Alternative Structural Designs
M6	Smart Manufacturing	C4	Transportation and Environmental Geotechnics
M7	Sustainability in Design	C5	Automation & soft Computing in Civil Engineering

materialstoday: PROCEEDINGS

Publications of i-MACE 2022 were in journals, as shown
Accepted papers of i-MACE 2023 will be published in
SCOPUS-indexed Conference Proceedings and Journals.

AIP
American Institute of Physics

Important Dates

➢ Submission of Full-Length Paper by — 15ᵗʰ May 2023
➢ Notification of acceptance of Paper by — 31ˢᵗ May 2023
➢ Submission of Final Full-Length Paper by 30ᵗʰ June 2023
➢ Early bird Registration on or before — 30ˢᵗ June 2023

Paper submission guideline is available On
www.i-mace.pccoepune.com

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[Name of the proceedings]

SEGREGATION OF PLASTIC BOTTLES USING ARTIFICIAL INTELLIGENCE

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Abstract—Plastic bottles are of two types of Biodegradable & non-biodegradable plastic bottles. recyclable bottles can be recycled, whereas non-recyclable bottles need to be disposed of carefully. Many non-biodegradable wastes such as plastic bottles are hazardous to both the environment and people. So, there is a better way to sort plastic bottles using Object detection AI.

This paper intends to create a system that only identifies a plastic bottle and classifies and sorts it as recyclable or non-recyclable plastic waste. The training the object detection model using python in Jupyter Notebook. The code runs in the anaconda prompt which sends the output data to the esp32 via Arduino IDE. Five tests was conducted on the system and after every test the cameras had tweaked for better and quicker detections and the chances of the system to detect the bottles were increased to 88.5%.

Keywords— Aritificial Intelligence , Object detection , Recyclable, Segregation , Non-recyclable .

1. INTRODUCTION

Plastic waste is becoming a growing concern especially in urban cities hence the plastic bottles need to be separated into recyclable and non-recyclable bottles. Currently process of separating bottles into recyclable and non-recyclable categories is done manually and it can take a lot of time and effort. Automation of this process using artificial intelligence (AI) makes it quicker and more effective. AI can identify and sort plastic bottles into recyclable and non-recyclable categories by training object detection models with unsupervised machine learning algorithms. The system can be designed to detect and sort the bottles using cameras. This method not only saves time but also reduces human workload and it also helps to reduce pollution by ensuring that recyclable plastics are properly sorted. Using object detection AI to separate plastic bottles has the potential to revolutionize waste management and contribute to a more sustainable future. Currently, plastic waste management take lot of time and effort as process is manual in most of its part ,To overcome this problem Automated Segregation of plastic waste in recyclable and non-recyclable plastic bottles using AI is suggested for Efficient waste management .

2. LITERATURE REVIEW

A. Shivaank Agarwala [6] paper identify features from plastic garbage photos, they recommend using a WADABA dataset for training the object detection model which can categorized plastic waste into five categorizes.

B. Subhasini Dwivedi [7] author proposes different sensors such has capacitive sensors and ultrasonic sensors are incorporated along the conveyor to detect the types of bottles. Capacitive sensor classifies weather the bottle is plastic or other type. So that only plastic bottles move forward for classification.

C. Konakalla Naga Sri Ananth [8] The author explains how to design a conveyor system with design parameters such as material to be conveyed, conveyor capacity and belt speed. Using standard calculations for motor power, belt dimensions, shaft diameter, pulley type, and gearbox ratio.

D. Jacinto Nascimento [12] the author offers a methodology for assessing methods for object recognition models in monitoring operations. The suggested approach is focused on comparing sensor data with real data to get the recognition errors.

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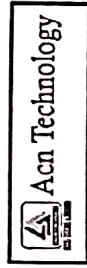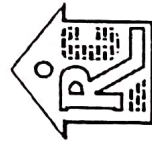# PIMPRI CHINCHWAD COLLEGE OF ENGINEERING

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CERTIFICATE OF PARTICIPATION

This is to certify that....PRITI..VAIRAGI...
has presented / attended a paper entitled '..SEGREGATION...OF..PLASTIC..BOTTLES..USING.
.ARTIFICIAL...INTELLGENCE...' along with co-authors
.....ALSTON...DIAS....+...RAHUL...G...SONKUSARE..
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held at PCCoE, Pune, India on 18th & 19th August 2023.

Acn Technology

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