Garbage Segregator

Team - Dhruv Gaba
              Nisarg
              Patel
              Chaitanya
              Kabade
OBJECTIVES:

- To segregate garbage to reduce human efforts.
- Segregate garbage into different classes.
- Serial communication between Arduino UNO and Raspberry Pi.
- Learn OpenCV.
- Make an integrated system make it functional for advance learning.
FLOW CHART

IR Distance Sensor -> Arduino -> Raspberry PI

Google Cloud Vision API

Conveyor Belt Motor

Web Camera
WORKING

- Sensory feedback is given to arduino which communicates with raspberry Pi.
- Arduino UNO communicates with Raspberry Pi using serial communication.
- Raspberry pi makes use of OpenCV & Google Cloud API to detect object in front of it.
- Then the captured image is then uploaded to Google Cloud Vision API for object recognition.
- After recognition we get back results from the API and then we manipulate the data to carry out segregation function.
**CHALLENGES:**

- Use of OpenCV for colour detection.
- Simultaneous processing of various inputs and outputs.
- Integrating google cloud vision API to raspberry Pi.
- Communication between Arduino and Raspberry Pi.
- Hardware upgradation for highest accuracy.
- Integrating system as a whole.
TRASH

```python
>>> %Run smallcodetetry.py
Labels:
TRASH
```
PLASTIC WASTE
BIODEGRADABLE WASTE
LEARNING:

- Detecting trash using OpenCV.
- Able to learn how Google Cloud Vision API works and use it with Raspberry Pi for trash classification.
- Successfully completed serial communication between Arduino and Raspberry Pi.
- Upgraded hardware according to the requirement for task completion.
- Debugging software for eliminating errors.
FUTURE WORK

- Major part which should be focused on is very precise recognition of trash and multiple objects simultaneously.
- High level of intelligence has to be implemented to make it for industrial or household purpose.
- Upgradation of hardware mechanism to industrial standards.
VIDEO DEMONSTRATION:
Thank You!!

Questions?