جامعة الملك فهد للبترول والمعادن
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Automated Classification of Garbage Team (39)

Introduction

Smart garbage classification systems leverage advanced technologies to enhance waste management processes. These innovative systems integrate sensors, artificial intelligence, and data analytics to automate and optimize the sorting of waste materials. By employing cutting-edge technologies, these systems aim to improve recycling rates, reduce environmental impact, and contribute to the development of sustainable and efficient waste management practices .

Project Objective

The project aims to develop a smart garbage classification system using sensors and AI to automate waste sorting, increase recycling rates, and promote sustainable waste management practices.

Constraints

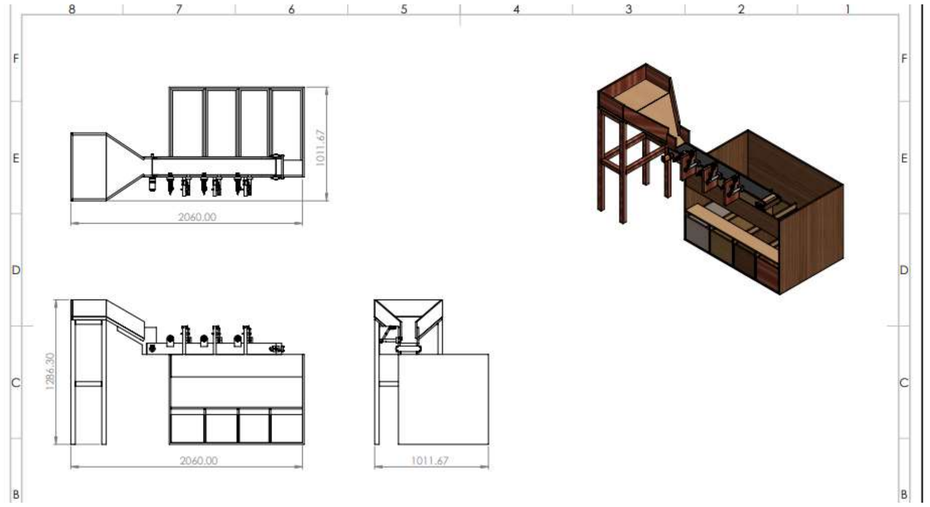
- Dimensions <= 60 cm * 120 cm * 180 cm
- Cost <= 1500 SAR
- Weight <= 23 kg
- Reliability >= 75%

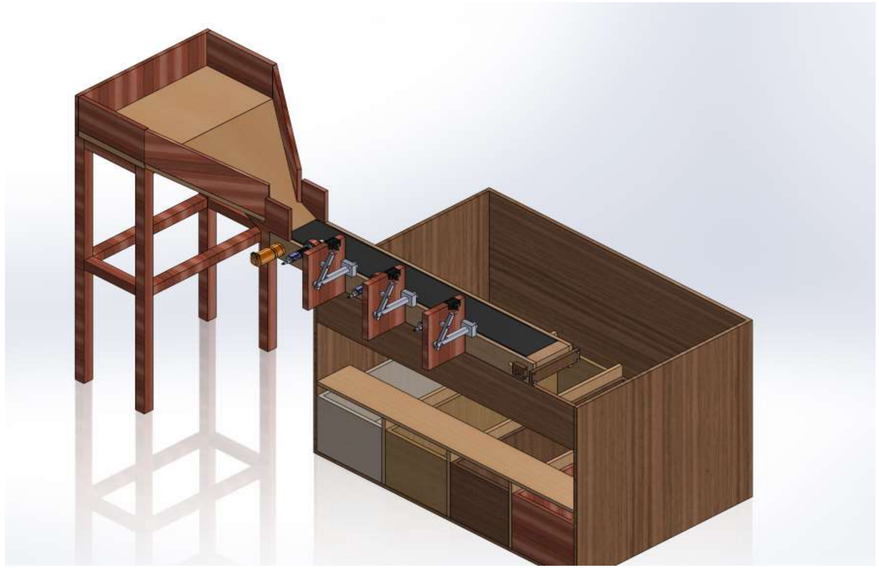
List of Specifications

- **Sensor Technology**
  Utilizes sensors like RFID, ultrasonic, infrared, or cameras to identify and classify waste items.
- **Automated Sorting Mechanism**
  Utilizes robotic arms and conveyor belts for automated waste sorting based on material identification. The lid opening and sorting process employ mechanical principles like kinematics and control systems, ensuring precise and efficient movements facilitated by physics and engineering in the design.
- **Energy Efficiency**
  Designed to be energy-efficient, possibly incorporating power-saving modes or renewable energy sources.
- **Mterials Sorting (Chemistry)**
  The project involves the classification of waste into three categories:
  papers, metals, and plastics. Chemistry plays a role in understanding the material composition of these waste items. It relies on the fundamental principles of material identification, distinguishing materials based on their chemical properties, such as conductivity for metals and polymer
  composition for plastics

Conclusion

- The project introduces an automated waste classification system that not only enhances user experience but also contributes to environmental sustainability. By facilitating smart waste classification, providing real-time data, and promoting recycling, the system is expected to reduce landfill waste, increase recycling rates, and improve overall waste management efficiency .





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