AUTOMATIC WASTE SEGREGATION AND MONITORING SYSTEM

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Introduction:

It is become necessary and challenging to manage the solid waste with rapid urbanization and increased population growth. While talking about waste collection and management, the attention can be highly focused towards the common dustbins placed by respective Municipal Corporation at the various area of the each city. As, it is the first stage which plays initial active role to gather the waste generated in society and will ideally fulfill the major aims like, maintaining cleanliness of society, reducing environmental pollution, managing the healthy and hygienic surrounding etc. But such aims will fail to attain practically due to number of causes suchas:

- People are not finding themselves responsible to use these dustbins properly and not to throw the garbage outside the dustbin.
- Improper placement of dustbin
- Improper management system which does not contain provision to track real time status of bin fullness
- To fail to attract people to put waste in dustbin.

Objectives:

- To ensure the protection of the environment through effective waste management measures.
- To protect the health and well being of people by providing an affordable waste collection service.
- To separately store hazardous waste for disposal in hazardous waste landfills or for appropriate processing.
- To attract the people to throw the waste into the bin.

Methodology:
Fig 1 gives the conceptual block diagram of a proposed system. The ARDUINO UNO is a master controller whereas all rest parts are interfaced with it. RF ID module is used where RF ID card will be shown to the RF ID reader for authentication purpose. After verification of an id DC motor will starts to rotate, where relay is used as a driver circuit for DC motor. The first stage will be metal detection where inductive proximity sensor will senses waste material. Where inductive proximity sensor use current induced by magnetic field to detect nearby metal objects. The inductive sensor uses a coil to generate high frequency of magnetic field. If there is a metal object near the changing magnetic field, current will flow in the object and it will be detected. If the waste is not metal it will move further to next sensor that is laser, in which laser beam will fall on LDR reviver because of transparency property of plastic the laser beam will pass through that and it is received by the LDR reviver. For the detection of plastic some threshold value will be assigned if that range is in between (50<x<450) the assigned threshold it will be considered as a plastic is detected if the transparency range above 450 it will be considered as solid waste.

The separated waste will be collected in respective collector this collected waste will be monitored using ultrasonic sensor the collector bin of height is approximately 15cm. If the waste filled 13cm ultrasonic sensor send a alert message to the mobile of respective maintenance person through Bluetooth and also displayed in the LCD display.

Results and Conclusions:

The waste segregator as the name suggests, segregates the waste into three major classes: metal, wood or paper and plastic. The proposed system would be able to monitor the solid waste collection process and management of the overall collection process. The timing and movement of the conveyor belt is controlled by Arduino UNO. Continuous and unnecessary operation of any particular section is thus avoided.