REVERSE VENDING MACHINE

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Abstract

People are throwing plastic in public places that causes the global warming and moreover plastic is not easily disposable.so the usage of plastic has become a big threat to the environment. Also, the usage of plastic bottles (use and throw like the cooldrink bottles. The soft drinks manufacturers are providing the drinks in plastic bottles.The plastic used is not disposed faster (i.e. the plastic used is).and the dustbin system is not maintained in India.Hence there should be a machine that can resist the throwing of plastic in public and also can encourage the people to throw the plastic in it.In this 21st century as the amount of waste generated is increasing but the landfill space for disposal is limited, recycling is an important approach to manage the waste effectively. The major contribution to the waste generated is plastic which are thrown away after their usage. We aim to build a Reverse Vending Machine for collecting plastic bottles with reward feature. The technology used for identifying plastic bottles is image processing. Once the number of bottles are identified depositor can claim the points by entering a unique ID and the accumulated points

1. INTRODUCTION

A reverse vending machine (RVM) is a machine that allows a person to insert a used or empty glass bottle, plastic bottle or aluminum can in exchange for a reward. After inserting the recyclable item, it is then compacted, sorted, and analyzed according to the number of ounces, materials, and brand using the universal product code on the bottle.[1] Once the item has been scanned and approved, it is then crushed and sorted into the proper storage space for the classified material.[2] Upon processing the item, the machine rewards people with incentives, such as cash or coupons.[2]The first prototype of a reverse vending machine was established in 1972 by TOMRA.[1] With nations increasingly adopting policies concerning recycling and sustainability, reverse vending machines have become the standard in areas with stringent recycling policies.[1] To date, there are more than one hundred thousand RVMs spread globally, located in countries including the United Kingdom.A reverse vending

machine is a machine where people can return empty beverage containers like bottles and cans for recycling. The machine typically gives back a deposit or refund amount to the end user. ... Reverse vending systems are an automated way to collect, sort and handle the return of used drink containers.Automatic driver drowsiness can be detected using artificial intelligence and visual information. System is to detect, track and examine face and eyes of drivers for this different real vehicle image of drivers are taken to validate the algorithms. It is a real time system work in different light conditions. The numbers of accidents are increased due to several factor, one of the main factors is that driver fatigue. Driver's sleepiness is also implemented using video-based approach.This system is non-invasive and human related elements are used. Band power and Empirical Mode Decomposition methods are used to investigate and extract the signal, SVM (Support Vector Machine) used to confirm the analysis and to categorize the state of vigilance of the driver. The system designs to find the drivers drowsiness using the hypothesis of Bayesian networks. The interaction between driver and vehicle features are extracted to get reliable symptoms of driver drowsiness. It presents more suitable and accurate strategies to design drowsy driver detection system. Brain and visual activity are used in drowsiness detection system. Electroencephalographic (EEG) channel used to monitor the brain activity. Diagnostic techniques and fuzzy logic are used in EEG-based drowsiness detector. Using blinking detection and characterization for visual activity monitored. Electrooculographic (EOG) channel are used to extract the Blinking features. Image processing and pattern classification used to take the driver facial pictures, tracking the features of driver face and categorizing the driver's sleepiness level. 17 different features points are determined after examining the facial muscle activities using Active Appearance Model (AAM). Head posture estimation method is used for detection of drowsy driver. In this method Viola and Jones algorithm for driver face detection. This method is nonintrusive and sturdy for finding the driver drowsiness in real time. Support Vector Machine (SVM) is using for extracting the face from video frames and Circular Hough Transform (CHT) is useful for mouth and eye state analysis. In this approach machine learning used to determine the human behaviour during driver drowsiness, for these 30 different facial actions including eye blink, yawning and head movements are collected to detect the driver drowsiness.

RELATED WORK

Solid waste management is one of the primary services provided by most Governments to their citizens.Solid waste management is the most important municipal service provided to citizens. The by-products ofrapid urbanization are growing faster than the rate of urbanization. It is estimated that an average urbanperson generates about 0.64kg of municipal solid waste (MSW) per day per person (Hoornweg, Bhada-Tata& Perinaz, 2012). Most developed countries are efficient in their ways of solid waste management, someDrowsiness appears in situations of stress and fatigue in an unexpected and inopportune way and may be produced by sleep disorders, certain types of medications, and even, boredom, for example, driving for long periods of time. The sleeping sensation reduces the level of vigilante producing danger situations and increases the probability of an accident occurring. It has been estimated that drowsiness causes between 10% and 20% of traffic accidents, causing both fatalities dead and injuries, whereas within the trucking industry 57% of fatal truck accidents are caused by this problem. Fletcher et al. in have stated that 30% of all traffic accidents have been caused by drowsiness, and Brandt et al. have presented statistics showing that 20% of all accidents are caused by fatigue and lack of attention. In the USA, drowsiness is responsible for 100000 traffic accidents yearly producing costs of close to 12.000 million dollars. In Germany, one out of four traffic accidents originate from drowsiness, while in England 20% of all traffic accidents are produced by drowsiness, and in Australia 1500 million dollars has been spent on fatalities resulting from this problem.

2. IMPLEMENTATION

Nowadays solid waste has causing a great issue to global especially plastic waste which has slow degradation material rate. So a device is required which can serve as a plastic collector and also encourage people not to throw plastic in public places.our project focuses on:(RVM) is meant to encourage recycling habit by giving rewards to depositors for every recycled itemin terms of reward points.Once the item has been scanned and approved,crushed and sorted into the proper storage space for the classified material.The machine’s design allows the user to only insert the item in, and no other action is required.The basic operations involve steps where the empty bottle/can into the receiving aperture; thehorizontal in-feed system allows the user to insert bottle one at a time. The bottle/can is thenautomatically scanned with the help of IR sensors. If the sensor value is 1 then the object isdetected and if the sensor value is

0 then the object is not detected. Based on sensor data themachine gives return coins to the user. If the IR sensor detects the bottle (obstacle) and it willgive to the Arduino microcontroller then controller dispensing the coins through servo motor.The main controlling device of the project is Arduino microcontroller. Storage can be extendedthrough many types of USB connected peripherals. The AVR is a modified Harvard architecture 8-

bit RISC singlechip microcontroller which was developed by Atmel in 1996. The AVR was one of the firstOn the residential side, many elderlies and disabled enjoy lawn maintenance, but are no longer able to enjoy the satisfaction of maintaining their own lawn due to the physical demands of traditional lawn mowing equipment. These researches (automatic lawn mowers) are very elderly and disabled friendly with the simple.There are many lawn mowers in the market powered by solar energy, conventional electric and internal combustion engines. In the past and even now, cutting of grasses in the schools, sports tracks, fields, industries, hotels, public center etc. Was done with a cutlass. This method of manual cutting is time consuming becauseBecause consumers use over 1.4 trillion beverage containers every year worldwide [3], the reverse vending machine's purpose is to help reduce and recycle this waste. Most unrecycled beverage bottles are scattered across landscapes, landfills, oceans and rivers.vending machine is an automated machine that provides items such as snacks, beverages, cigarettes and lottery tickets to consumers after cash, a credit card, or other form of payment is inserted into the machine or otherwise made

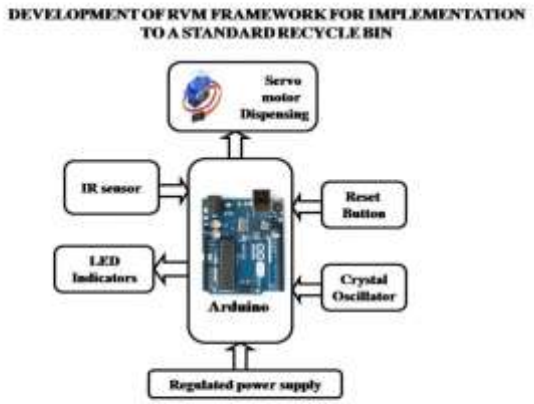
- Convenient access to healthier options. Healthy YOU Vending machines are loaded with a wide variety of healthier snacks, drinks and meals. ...
- Increased productivity. ...
- Improved employee satisfaction. ...
- Promote workplace wellness.
- 4.5: SCOPE
- Reverse Vending Machine Sales is segmented into types of organization, application and regions with regard to development models and commitments to the general market. The Global Reverse Vending Machine Sales industry report focuses on developing models in global and national regions on all critical parties, including the cost, value, demand, benefit analysis as well as competitive analysis.

3. EXPERIMENTAL RESULTS

The basic operations involve steps where the empty bottle/can into the receiving

aperture; the horizontal in-feed system allows the user to insert bottle one at a time. The bottle/can is then automatically scanned with the help of IR sensors. If the sensor value is 1 then the object is detected and if the sensor value is 0 then the object is not detected. Based on sensor data the machine gives return coins to the user. If the IR sensor detects the bottle (obstacle) and it will give to the Arduino microcontroller then controller dispensing the coins through servo motor. The main controlling device of the project is Arduino microcontroller. Storage can be extended through many types of USB connected peripherals.The AVR is a modified Harvard architecture 8-bit RISC single chip microcontroller which was developed by Atmel in 1996. The AVR was one of the first microcontroller families to use on-chip flash memory for program storage, as opposed to One-Time Programmable ROM, EPROM, or EEPROM used by other microcontrollers at the time.

Block diagram of the project:



4. CONCLUSION

The Reverse Vendor Machine ensures that it can be bought at an affordable price and makes sure that whoever tries to put plastic into it get their coin in return.It encourages people to put plastic into the machine keeping in view that they get some money.Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed

carefully, thus contributing to the best working of the unit. Secondly, using highly advanced ICs with the help of growing technology, the project has been successfully implemented. Thus the project has been successfully designed and tested.

5. REFERENCE

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