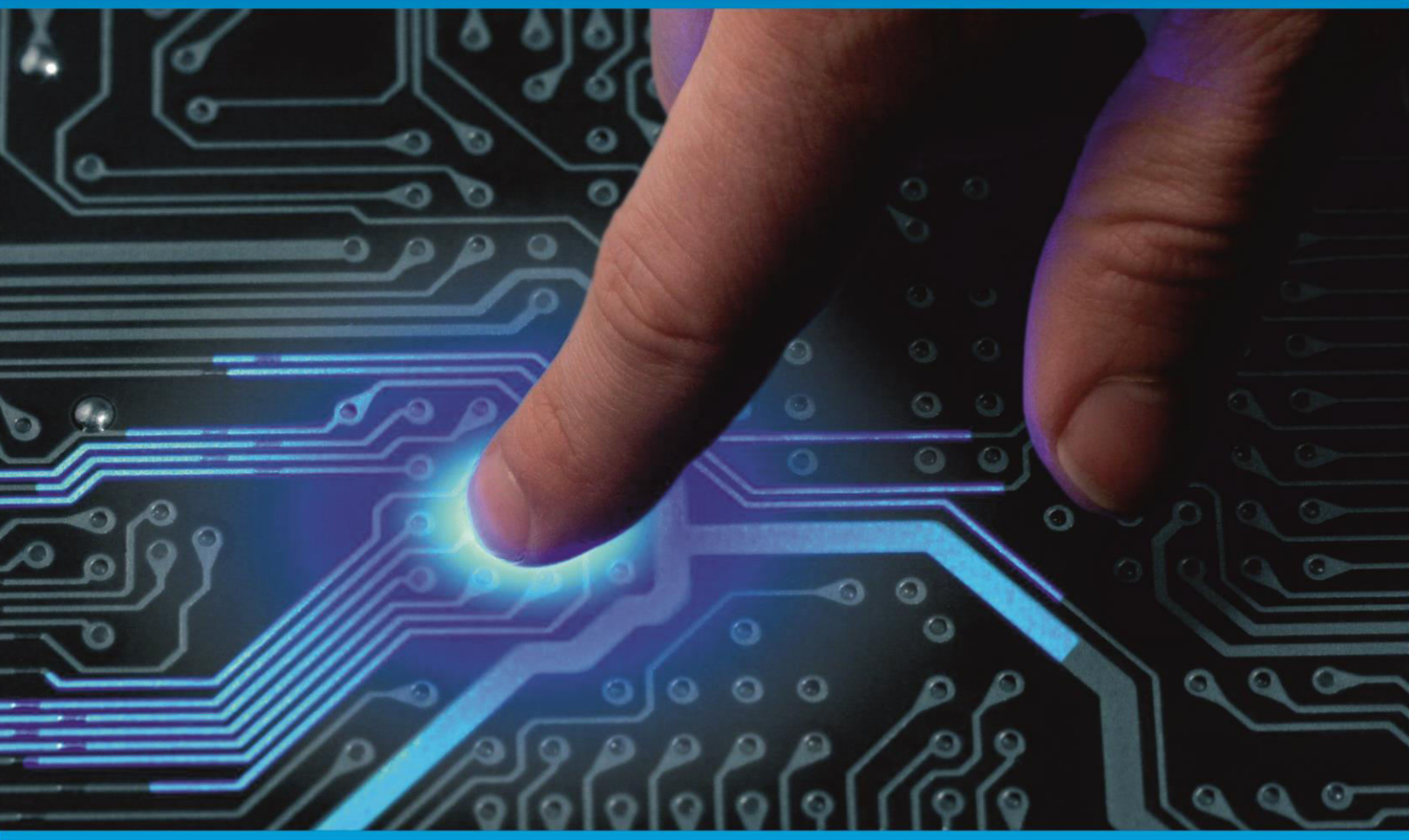
IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 3, March 2021

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.488

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International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 3, March 2021 ||

| DOI: 10.15680/IJIRCCE.2021. 0903125|

IOT Based Automated Electronic Travel Bag System (E-Bag Bot)

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A B S T R A C T: In our day to day life travelling has become one of the important aspects for human being Generally for travelling purpose people uses normal luggage bags or suitcase but in today's world such types of bags have Less comfort and ease of access and have more physical work. All the electronic inventions are to reduce manual effort upon mechanical work and to create an interaction between human and machine. Human following bags are one of the finest technologies in electronics and by utilizing its advantages and applications in day to day life. The existing model of bag following technologies uses ultrasonic sensor for obstacle detection. The model we proposed reduces the following range between user and the bag thereby reducing chances of obstacles. Base on the research and the study we expected that our system will be more practical and provide comfort for the users at an affordable cost.

KEYWORDS: Travel bags, Ultrasonic Sensor, ease of access, Electronics and obstacles

I. INTRODUCTION

The first modern, real-time embedded computing system was the Apollo Guidance Computer, developed in the 1960s by Dr. Charles Stark Draper at the Massachusetts Institute of Technology for the Apollo Program. The Apollo Guidance Computer was designed to collect data automatically and provide mission-critical calculations for the Apollo Command Module and Lunar Module. In 1971, Intel released the first commercially available microprocessor unit -- the Intel 4004 -- an early microprocessor that still required support chips and external memory; in 1978 the National Engineering Manufacturers Association released a standard for programmable microcontrollers, improving the embedded system design; and by the early 1980s, memory, input and output system components had been integrated into the same chip as the processor, forming a microcontroller.

The microcontroller-based embedded system would go on to be incorporated into every aspect of consumers' daily lives , from credit card readers and cell phones, to traffic lights and thermostats. An embedded system is a microprocessor-based computer hardware system with software that is designed to perform a dedicated function, either as an independent system or as a part of a large system. At the core is an integrated circuit designed to carry out computation for real-time operations. Embedded system applications range from digital watches and microwaves to hybrid vehicles and avionics. As much as 98 percent of all microprocessors manufactured are used in embedded systems. Embedded systems are managed by microcontrollers or digital signal processors (DSP), application-specific integrated circuits (ASIC), field-programmable gate arrays (FPGA), GPU technology, and gate arrays. These processing systems are 2 integrated with components dedicated to handling electric and/or mechanical interfacing. Embedded systems programming instructions, referred to as firmware, are stored in read-only memory or flash memory chips, running with limited computer hardware resources. Embedded systems connect with the outside world through peripherals, linking input and output devices.

II. LITERATURE SURVEY

3. Sonali Patil1, Shrutika Patil2, Anuja Patil3, Prof. Deshmukh S. C.4 feb 2019.On their paper, explained how robots can act in concert with human behavior. Our aim is to develop a robot capable of maneuvering through busy airports behind its owner while hauling his or her luggage. In this paper, In order to follow a human, a mobile robot needs to know the position of the person and must be able to determine its own path in order to follow his target. We consider a method using an transmitter & receiver. In order to prevent collision with , ultrasonic sensors are used to

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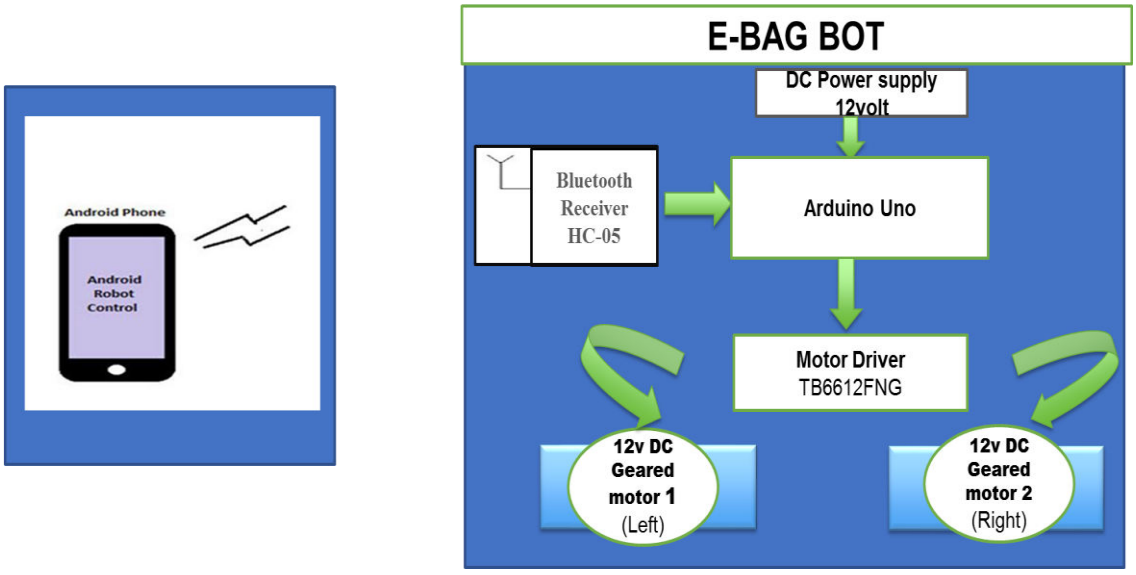
detect objects that may be in its path. We present the effectiveness of our approaches by showing the experimental result using a real platform. In this article we describe the research carried out in the attempt to develop a human-following robot Detection is the process of finding both position user and robot. Here we are using ultrasonic sensor. The ultrasonic sensor is the key element in target detection. Ultrasound sensor measure distance by using ultrasound waves. It is based on the properties of acoustic waves with frequency above human audible range. There are two main parts in the sensor, a transmitter to transmit the sound waves and receiver to receive echo. Transmitter converts electrical energy to sound energy and receiver part receives the echo and turn the received echo and received sound waves into electrical energy. And the robot will move forward, right or left in accordance with the detected human presence. The basic principle behind the operation is that the ultrasonic transmitter emitted the ultrasonic waves in one direction. And started timing when it launched. Ultrasonic spread in the air. And would return immediately when it encountered obstacle on the way. At last, the ultrasonic receiver would stop timing when it received it received the reflected waves. As the ultrasonic spread velocity is 340m/s in the air based on the timer record t. We can calculate the distance (s) between the obstacle and transmitter namely, s = 340t/2 This is called as the time difference distance measurement . The obstacle detection is done on the robot by providing an infra red eye to it. The infra red eye is the IR transceiver circuit through which the robot detects the obstacles and controls itself either by changing direction for stationary obstacles or by stopping itself. waiting for the obstacle to move away. IrDA specification requires that the optical channel operate in the infrared spectrum from 850 nm to 900 nm

4. Maniyar Rut Vipulbhai, Kavya Hegde, Komal Jotiba Dalvi, Judith Kathryn E IJCRT | Volume 8, Issue 5 May 2020 | ISSN: 2320-2882. In this paper they have used method used here is solar cell and Radio Frequency Identification (RFID). The solar cell is attached to the front part of the bag, it charges the rechargeable battery. Using which the phones can be charged. It has a Liquid Crystalized Display (LCD) display, which displays the timetable for the users. It has an alert system, which tells the user if any additional books are kept in the bag. Tracking using Radio Frequency Identification (RFID) is very tedious job hence not preferred. It is mainly useful for day scholars of schools and colleges. As the bag is connected to a Bluetooth module it is not widely used. The advantages are useful for tracking the people who are kidnapped, it also has an alert system. The disadvantage is solar cells won't be useful all the time.In this paper the Radio Frequency Identification (RFID) is used for identification of the Baggage and the Customers . The Radio Frequency Identification (RFID) is attached as tags on luggage and in the tickets of passengers.

III. SYSTEM DESIGN AND BLOCK DIAGRAM

Technical Block diagram:-



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Components required

4.1 Hardware Components:

1. ARDUINO UNO BOARD
2. BLUETOOTH MODULE
3. MOTOR DRIVER
4. DC GEARED MOTORS
5. RECHARGEABLE BATTERY
6. USB CABLES A-B
7. JUMPER WIRES

4.2 Software Components: ARDUINO IDE

4.3 Objective and Overview

Our innovation is to technologically update the travel bags using electronics automation for more comfort and also make the bags more secure by connecting it through IoT.

4.4 Proposed Model

The proposed system model confines the intrusion distance between user and the automated bag to a range of 1 metre.Since the intrusion distance is decreased it also proportionally reduces the room for obstacle thereby gaining maximum level of obstacle avoidance.Instead of using ultrasonic sensor for obstacle detection , our system uses magnetometer and accelerometer sensor respectively to know the refined data of user's orientation (location) and rate of motion(movement)/speed at which the user moves .By this way we can increase the efficiency of the automated bag following robot.

4.3 Methodology

The Body of the travelbag (E-Bag bot) is made up of three wheeled design language where the two wheels at the back are electrically motorised using 30 rpm 12 V DC Motor which is controlled by L9110S Motor Driver and the front wheel is an caster wheel (trolley wheel) for additional support.The wheels are powered by 12 V Rechargeable battery.A Bluetooth module-HC-05 is used for the communication between the user and the travel bag(E-bag bot).All these above mentioned components are connected to Arduino UNO using jumper wires.

IV. CONCLUSION AND FUTURE WORK

E bag bot is an automated luggage carrying system which innovatively gives a solution for ease of travel while carrying bags. The E-Bag Bot system will address the problem of ease of access and comfort of the users while travelling by automated bag following technology.The audience who will be directly benefitted are the old aged people, pregnant women where there is an essential need for luggage carrying.These people will realize that there is no need for carrying or looking after their bags.This E-Bag Bot system might have a potential for disrupting the need for luggage carrying personnel who work for wages.In this EBag Bot neither the user nor the bag will be in need of location of the other since they both are nearby at a reduced intrusion distance of 1 metre.

This technology of E-Bag Bot has a wide scope in future Swhere it can be modified and altered to be more secure, privatized. In the forth coming generations of E-Bag Bot it offers a room for combining with other technologies such as Digital Signal Processing for more efficiency of object detection. . IoT for real time transmission of data in the cloud. 3. Machine Learning helps to determine the objects present in the bag , the orientation , Compatibility of new products which should be included in the bag and to update it in the checklist present in the mobile application of the E-Bag Bot.

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ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

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