

Automatic Shoe Dispenser

Dr. Balamurugan M

Assistant Professor, Department of EEE, Faculty of Engineering and Technology,
Jain (Deemed-to-be University), Ramnagar District, Karnataka – 562112
Email Id: balamurugan.m27@gmail.com

Abstract

Today everyone believes in his maintaining his/her personality and this personality depends to a certain extent how a person looks. To look handsome or gorgeous everyone tries to buy good quality shoes and cloths. Shoes are very costly these days and there are variety of shoes for different occasions. So there is need to develop a shoe rack to keep the shoes in safe condition and also to keep their shining intact. In this research paper a shoe rack has been proposed which is based on the same requirement. With the help of sensors, camera, motor and a microcontroller the shoe rack can be operated and helps to keep the shoes in different segments depending upon their need for an occasion. This automatic shoe dispenser can be very helpful to keep the costly shoes in home, showrooms in safe condition and handling of the shoes will be very easy.

Keywords: Camera, Microcontroller, Motor, Occasion, Segment, Sensor, Shoes.

I. INTRODUCTION

Shoe rack is used for the storage of the shoes of different types. It can also be considered as the furniture and generally the shoe racks come in the wooden material. Today with the help of Computer Aided Design multiple designs of the shoe rack s can be made. In the conventional shoe racks as the multiples shoes were kept on the shelves made in the shoe rack there was no specific space for each of the shoe. Shoes or other foot wears were kept based on the availability of the space in the shoe rack and sometimes more than the space available footwear were kept inside which lead to the overlap of the footwear and thus damage to the footwear made up of soft materials specially ladies footwear got damaged or get dirty. This was the main problem of the conventional shoe rack. Secondly it was difficult to make appropriate choice for the shoes for a particular occasion [1]. So there was need of the automatic shoe rack dispenser which can keep, manage and retrieve the footwear in a desired manner without any damage or making the footwear dirty.

Other problem with the footwear was of the odor problem. So there is need to address this issue also so that the shoes can be dried and the germs of the shoes or the footwear can be killed inside the rack automatically. For the development of the rack various types of sensors can be used which will provide input to a microcontroller which in turn control all the sensors installed inside the rack [2]. The input to the microcontroller is provided based on the current status of the rack and this input is required to be provided and manipulated to follow the process of the desired function of the user. Infrared sensor can be used for the empty or non-empty status of the rack, UV light can be used to kill the germs of the footwear and simultaneously the odor too. Some kind of foot spray or perfumes can be sprayed with the help of sprayer jets installed inside each rack. Small camera can be used to provide the exact picture of the shoes inside the rack. Heating units can be used to dry the moisture present inside the rack and also of the shoes. A touch screen can be used to control all the functions of the rack and also to view the shoes and thus making a proper choice for them. The shoe rack can be divided into the segments depending upon the kind of shoes kept inside the shoe rack like the formal shoe segment, casual wear shoe segment and the party wear shoes segment. It will make the choice of the shoes more specific.

The Arduino UNO is the best board to start with the electronics and coding/programming. The UNO is the very much in demand and documented board of the whole Arduino family [3]. Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 are analog inputs, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), one USB connection, one power jack, one ICSP header and one reset button. It also contains everything required to support the microcontroller; by simply connecting it with a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. You can tinker with your Uno without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again. "Uno" means one in the Italian and was chosen to mark the release of Arduino Software –IDE b 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino. The Uno board is the first one in the series of USB Arduino boards and the reference model for the Arduino platform, for an extensive list of the current, past and the outdated boards.

II. LITERATURE QUESTION

1. Why is there the need of the display or the touch screen on the shoe rack?
2. What is the use of the motor in the shoe rack?
3. How to select the particular kind of shoes from the rack?

III. LITERATURE REVIEW

Poh Kiat Ng, Kian Siong Jee, Nicholas Ming Shen Ng in their research paper proposed an automated shoe rack with improved design to increase the usability [4]. The design of the automatic shoe rack was analyzed on the basis of the REBA score. The REBA score obtained for

the design proposed in this research paper was 1. REBA determines a design based on the usability score. It was easy to place and retrieve the shoes. Gupta, Rupesh; Sharma, Sarang; Gupta, Sheifali; Gupta, Deepali in their research paper proposed an automatic shoe rack system with sensors coupled with the motor mechanism. This system provides an automatic shoe rack system with an easy mechanism for the organize, store and retrieving the shoes. This system helps to negate the disorganized arrangement of the shoes and thus providing a comfortable lifestyle for the youngsters. This design of the shoe rack minimizes the incidences of the dust and odor. The design of the shoe rack proposed in this current research paper proposed a different design for automatic shoe dispenser but with multiple segments for the different occasion. The design proposed in this research paper is useful for home as well as for the commercial purpose.

Nik Mohamad Zhafran Bin, Nik Mohd Zuber in their research paper proposed the design and the development of the apparatus that can be used to help the people drying the shoes in a short period of time. It also provides notification to the user to aware him about the condition of the rack and the shoes in case of any unusual activity. For the process of drying the shoes touch sensor, DHT sensor and the infrared sensors are used to give input to microcontroller and follow the process set by the user. To kill the bacteria, germs and the odor of the shoes UV light rays has been used. FENG Xiao-jian, CHAI Yong-li, LI Bao-hong, LU Hong-yu in their research paper proposed an automatic portable shoe rack for the rapid drying and the sterilization of the athlete's foot. For the system of the automatic shoe rack an air heater, quartz burner, timer for the heating time and a shoe hook to hold the shoes has been installed in the system. This system has a folding structure and is portable in nature [5]. An experiment was conducted for the rapid drying, deodorizing and the sterilization of the shoes which helped in the better care of the foot of the athletes wearing the shoes.

IV. METHODOLOGY

The shoe dispenser system consists of a series of segments to hold the shoe in their respective segments. The shoes are categorized dispensed and kept by the system. The shoes are displayed on the display of the system from which a person can select the desired kind of shoes. The segments of the shoes can also be categorized as the kind of shoes like party wear, formal shoes and daily usage shoes so that particular segment can be selected for the kind of the shoes required. When the shoes are selected on the display, that particular rack shoes will be come out with the help of a motor attached with that rack and when the shoes are taken by the person, a gentle push will be given to the rack which will automatically will get closed with the reversible motion of the motor [6]. The status of the shoes will also get updated on the screen automatically. The action selected on the display will be conveyed to the motor of the particular rack with the help of a microcontroller which is Arduino UNO. Arduino UNO controls the movement of the motor in the forward direction and also the backward movement of the rack is controlled with the help of the microcontroller.

V. RESULTS & DISCUSSION

This shoe management system will help in the better management of the shoes. It will help to safeguard the shoes than a normal rack as only one shoe will be placed inside the particular rack. It will help a person to make a better choice of his shoes for a particular occasion. It will help to categorize the shoes as per the need of the occasion like for party wear there will be separate choice, formal shoes will be placed in a different segment and the casual wear shoes will be placed in a separate segment. Whenever a person wants to get ready for a particular occasion, choice of the shoes can be made from a particular segment. It will also help in keeping the grace of the shoes well intact. Shoes will remain in the same condition after polishing means there will be no need to brush up the shoes again after polishing. The segments of the rack be changed as per the need because there may be increase in the number of shoes for a particular segment and thus to make full use of the racks flexibility for the interchangeability of the segments has been provided in the proposed system of automatic shoe dispenser.

VI. CONCLUSION

This automatic shoe dispenser will be very useful for the home usage and also for the showrooms. It will help in maintaining the safe condition of the shoes. Handling of the shoe will be quick and easy. There will be no more need to think about all the shoes a person possesses to make his/her choice while leaving for an occasion. This automatic dispenser works like a showcase for the shoes and the choice can be simply made from the display of the dispenser. The automatic shoe dispenser proposed in this research paper can be made to automatically dry and kill the germs of the footwear for the health purpose and also the automatic cleaning of the racks can be made with the help of the circulation of the pressurized air inside the racks.

VII. REFERENCES

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