SMART AI BASED SOLUTIONS AND SERVICES FOR COLLEGE LIBRARY

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ABSTRACT

Currently, the demand for automated technology is increasing rapidly. People are trying to find sources that make their work easier, effortless, and fast. As the project name suggests this project will be divided into two parts one part is chatbot/Book recommendation system another part will be robotics, we are trying to develop the library management system. The mains motive of this project is to understand the various machine learning techniques and algorithms. Our project helps students and making a good relationship with them. The robot generally refers the machine that looks and can work similar to a human. The new age industries are rapidly shifting from manual control of systems to automation, in order to increase productivity and deliver quality products.

Keywords

Robotic car, Library management, Machine learning algorithms, Python, Autonomous Robots, Machine Learning.

1. INTRODUCTION

In many colleges library the students faces inconvenience due to lack of information, or they are depended on the librarian. So we have proposed the idea that we can provide students the webpage, on which the student can find out which books are available in the library, in which desk the book is kept or if the book is not available. If this system will be provide the student can know previously before going to search for the book that if the book is available, or the most popular book for the particular topic which he/she is searching for. This can reduce the time wasted for searching a a particular book. The development of Robotics arm for the variety of applications using various machine learning techniques like reinforcement learning. The proposed system will be modified and may be used in drone technology. Book picking robot is used for

administration purposes, which can perform activities like, identifying books, picking and delivering it to the students, and after the student returns the book the robot will automatically place the book back to the same location. The System can also be used for surveillance purpose, if the librarian is not available then the camera attached on the system can help keep the eye on the surrounding. The students can also give a feedback, which can help us keep the record of are the student happy with the service or they are not happy, and we can improve or make modifications in the service given accordingly. And this also help in collecting the data which can also be used in any another application.

2. METHODLOGY

Chat Bot: Our proposed methodology includes python 3.8(Vanilla) as a main programming language in which we have imported packages named re and long responses for extracting various functions. We have included pip version 20.3 along with that we set up a gpu for the bot environment. we have included various responses as well as long responses which will help the bot to match the best response and give us a perfect result. The steps in which the Chat Bot was created are as follows:

1)Prepare a dependencies / download all required software

2) Import the classes
3)Create and Train the chatbot
4) Communicate with chatbot to see whether all the commands given are working properly.

Robotic Arms: Our proposed system is Controlled by Arduino and can be operated by using android application. The Robot will be trained using Machine Learning algorithms and can be used in Various Business applications. The steps in which the robotic arms where created are as follows:

1) The robotics arms was been divided into two parts the one was robotic arm carrier / robotic car and the second one was actual robotic arms.

2) Both the projects are controlled using Arduino Uno Controller.
3) For working of robotic car the steps are as follows.
4) The robotic car is Controlled Using Android Application.
5) The Bluetooth Module Is connected on the car by using bluetooth module we can connect Chat Bot Simplifies the response creation Counts words in predefined message Calculatethe percent of recognized word Matching the best probability Understanding the response User Input Testing the long responsethe car to the mobile application,
6) The Arduino Uno is used to control all the procedures of the car
7) The Motor control Driver is used to control the motors placedon the car.

Sentimental Analysis:
In sentimental analysis first the data is imported, the data be obtained from the authentic resources and can be imported into our code editor using read.csv.
The next step is to find out the features that influence the sentiment of our objective.
Once we draw the conclusion based on the visualization, we can move on to the next step which is creating a wordclouds.
Next Step is to classify the reviews into positive and negative.
Now we will import logistic regression which will implement regression with categorical variable.
The Final

3. AREA OF STUDY

The study has been conducted on the basis of Librarymanagement and security.

4. TOOLS USED

1. Arduino UNO
2. HC-05 Bluetooth module
3. Motor controlled shield for arduino
4. DC motors
5. Power Supply
6. Arduino IDE
7. Py-charm
8. Jupyter notebook

5. DESCRIPTION OF TOOLS

Arduino UNO:

The Arduino Uno is open source microcontroller board based on microchip Atmega328P microcontroller and developed by Arduino and released in 2010.

Bluetooth Module (HC-05):

The HC-05 module can be operated within 4-6V of power supply

. It supports band rate of 9600, 19200, 38400, 57600, etc
. Most importantly it can be operated in Master -Slave mode which means it will neither send or receive data from external sources**.**

Motor Controlled Shield: -

L293D guard is a motorist board grounded on L293 IC, which can drive 4 DC motors and 2 stepper or Servo motors at the same time. Each channel of this module has the maximum current of1.2 A and does nt work if the voltage is further than 25v or lower than 4.5 v. So be careful with choosing the proper motor according to its nominal voltage and current.

DC Motors: -

A DC motor is any of a class of rotary electrical motors that converts direct current (DC) electrical energy into mechanical energy. The most common types calculate on the forces produced by glamorous fields. Nearly all types of DC motors have some internal medium, either electromechanical or electronic, to periodically change the direction of current in part of the motor.

Power Supply:

This system requires 5V, 1A power supply.

Py-Charm: -

PyCharm is one of the most popular Python IDEs. This is due to the fact that it was created by JetBrains, the company behind the well-known IntelliJ Concept IDE, one of the larger 3 Java IDEs, and the "most smart JavaScript IDE," WebStorm. There are numerous explanations on why this is the case. Its use of Django for web development is a further plausible argument. PyCharm is the most comprehensive and full integrated development environment for working with the Python programming language due to a number of characteristics. PyCharm is the most comprehensive and full integrated development environment for working with the Python programming language due to a numberof characteristics

Arduino IDE:

In addition to a text editor for writing code, a message area, a text console, a toolbar with buttons for frequently used operations, and a number of menus, the Arduino Integrated Development Environment, sometimes known as the Arduino Software (IDE), is also available. It establishes a connection with the Arduino hardware and communicates with it to upload programs.

6. WORKING

For Chatbot:

1) First the step in the chatbot is the user gives the input.
2) After the input is given the next step is done is to understand theresponse and react accordingly.
3) After the input is been understand by the system the next step is doneof matching the best probable answer for the given input.
4) After that next process is of calculating the input and the data presentin the system itself.
5) Then the chatbot matches the best response.
6) And then accordingly given the output.

For Book Recommendation System:

1) In this system lots of data about various books is been stored.
2) This system can accessed through the website.
3) The first step is the student will go to the webpage, from wherehe/she can access the data.
4) Then their he/she will search for the book which they want.
5) After they give some input the system will show some resultaccordingly.
6) System will also display the data about is this book available, in which desk the book is kept, the ratings of the following book, and it will also recommend some another books.

For Robotics Arm:

1) The robotics arm consists of two a, one a robotic hand carrier / robotic car the second part is the actual robotic hands.
2) Both this systems are created using Arduino Uno Controller.
3) The Robotic Car is been controlled by using android applications.
4) The first step is the 5V power supply is given to the Arduino Uno.
5) All Components are activated after the power supply is given.
6) After that the Bluetooth module Located on the Car is connected to the the Mobile application by using Bluetooth.
7) The next step is that user gives the input by using the androidapplication.
8) The Arduino uno sends the command to the motor driver.
9) The motor Driver then give the commands to the motor according tothe user input.
10) If the user press reverse button the motor rotates in that way, if theuser press forward button the motor rotates that way.
11) Now the second in this system that is robotics arms.
12) The robotics arms are also controlled using Arduino UnoController.
13) The potentiometer are been placed on the Bread Board the robotics hands acts according the potentiometer.

For Sentimental Analysis:

1) This system is based on the reviews/feedback.
2) The user which will visit the library, and after visiting the library he/she will give the rating, and this ratings will be sorted out according the particular book.
3) And this feedback wiil be used for further use.
4) This rating will be used to rate the book accordingly.
5) The rating will change continuously, according the rating given by the user.

7. SYSTEM BLOCK DIAGRAM

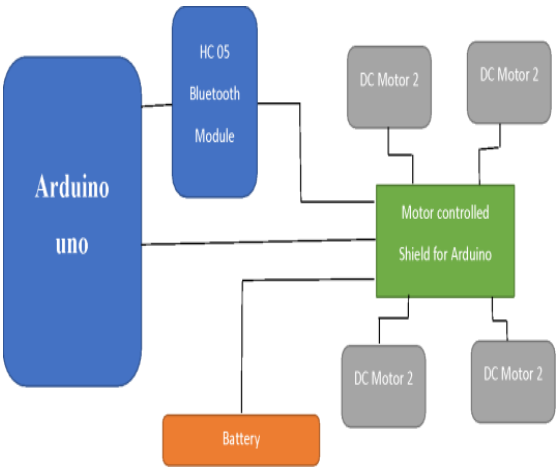

Fig.(a) Robotic Car

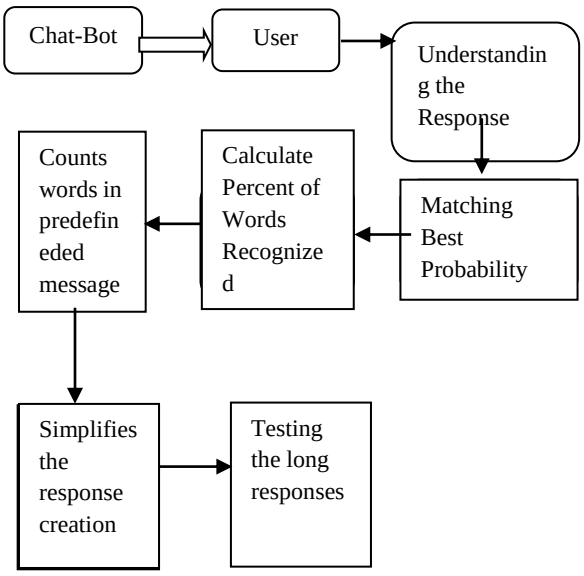

Fig.(b) Chat-Bot

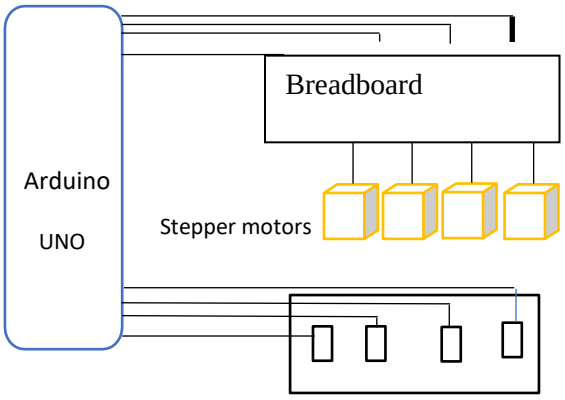

Fig.(d) Robotic arms

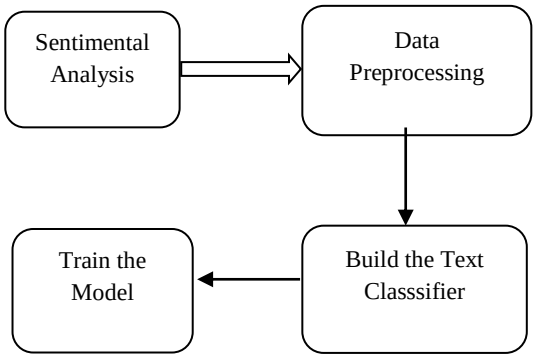

Fig.(c) Sentimental - Analysis

8. CONCLUSION

The Project will be used in college libraries where the system will help the students as well as the librarian to reduce the time wasted in the library, and to known which book is available in the library.

9. ACKNOWLEDGMENTS

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