Voice Input Transport Enquiry System for the Benefit of Society

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Abstract

"Voice Input Transport Enquiry System" is a system which works based on the voice input given by the user who intends to know about transportation facilities available from a certain terminal. There is no communication which is understood more properly than voice. This system too uses voice commands to provide input and gives the required information to the user in the form of audio output. Users can get all types of transportation details between any two places. This system will have an additional feature of getting the traffic status of a particular place. The user can get a live video feed of the traffic of that place. As the whole, this system can be operated by speech or voice so, making it easier to use for the blind people.

Key words

Voice input, transportation facilities, voice output, traffic status, speech to text processing, plotting direction in map.

1. Introduction

Speech to Text conversion takes input from microphone in the form of speech & then it is converted into text form which is displayed on desktop. [1] Unfortunately, for a decade the core speech generation technology i.e., generation of speech from a phonemic sequence has largely been automated due to unit selection techniques. [2] Speech Recognition is a technique to analyze the speech spoken by a person that how it is differ to other personas with any approach to voice recognition, the first step is for the user to speak a word or phrase into a microphone. The electrical signal from the microphone is digitized by an "analog-to-digital (A/D) converter", and is stored in memory. [3] "Voice Input Transport Enquiry System" is a system that gives

information about various types of transport facilities available between any two places. Till now the systems that provide us information about various transports are the chart available at the bus and railway terminals, and few applications and time table books of a particular type of transport. Voice Input Transport Enquiry System, however, gives the details of every possible transport system, i.e. buses, trains, cabs, metros, etc. This system will also work on audio input and audio and text outputs. The system will have a microphone through which user can give inputs and speakers through which the results will be given.

2. Existing Application

There are many applications available right now which give details about transport modes form a particular source to destination. But all these applications are either limited for a particular type of transport or gives limited information.

Google maps application provides similar kinds of facilities It takes input form the user, namely, the source and the destination and display all the modes of transport available. It also shows the route plot on map. However, it does not provide some details like fairs or the best route to take at that particular time.

This system aims at taking the features from all the existing applications and making them available at a single place and also adding some new features, like the live video feed.

3. Features of Proposed Application

The proposed app has features like audio input and output, information about transport, live traffic status and suggestions.

3.1 Audio Inputs and Outputs

User will need to select three options: - source, destination and type of service whether bus, train or cab. The input will be taken as voice input which is termed as convenient way of usage. Voice input doesn't require much attention while entering the input. Upon entering the required fields, the output will be shown on a tabular format and interestingly all the outputs will be read out to the user in human-voice. As a result, this service is helpful to blind users as well.

The conversion of speech to text will be done using JavaScript web speech API. The home page of the application will receive audio input from the user. Now a JavaScript function is triggered as soon as the user gives some audio input. This function creates a speech recognizer object which recognizes the audio input from the user and synthesizes it. After that it is converted into text and displayed on the screen.

The conversion of text to speech is done using the same API. A speech synthesis utterance object is created when there is a need to convert text to speech. This object calls a function named speak which takes the sentence to be converted to speech as a parameter. This speak function makes the system speak out the required text.

3.2 Transport Information

The output includes: -

- Transport Number
- Transport type
- Source to destination distance
- Expected time for each route selected
- Fare for each route selected
- Convenient route to be followed

3.3 Live Traffic Status

The system will provide live traffic status for each route and will warn the user to avoid the congested route to reach the destination early. This feature is a plus point for cities with full of traffic jam condition where due to lack of information people gets stuck for triple amount of time than they need to complete the travel.

The live video feed system will be implemented using IP Cameras. IP Cameras are capable of high quality video recording and transferring live video over a network or the internet. If we want to get the live video feed of the traffic of a place then the IP camera needs to be installed at that place. Like this multiple IP Cameras has to be installed at multiple places. All these cameras are connected to a central Network Video Recorder (NVR). 2-way digital communication takes places between the IP Cameras and the NVR. Each of the cameras will have a unique IP address by which they can be accessed from the NVR. The Voice Input Transport Enquiry System application will be programmed to access the central NVR and get the output of the required IP Camera using the IP address of that particular camera.

3.4 Preferable Route Suggestion

The system is user friendly and will provide preferable route suggestion i.e. shortest and easiest route suggestion for different transports available. User may switch between their choices according to their need.

4. Workflow Diagram

It's a web based application. As soon as someone opens the application, the welcome page will be loaded and it will detect the user's location. In the welcome page user needs to provide source and destination location and the type of transport. The data is taken as voice input and then converted to text. Then this data is sent to the servlet from the web page. The servlet send this data to the model. Model searches the database and finds the required details and sends back to the servlet. Servlet then displays those data to the user using a new webpage in the required format and also speaks out row by row for better understanding.
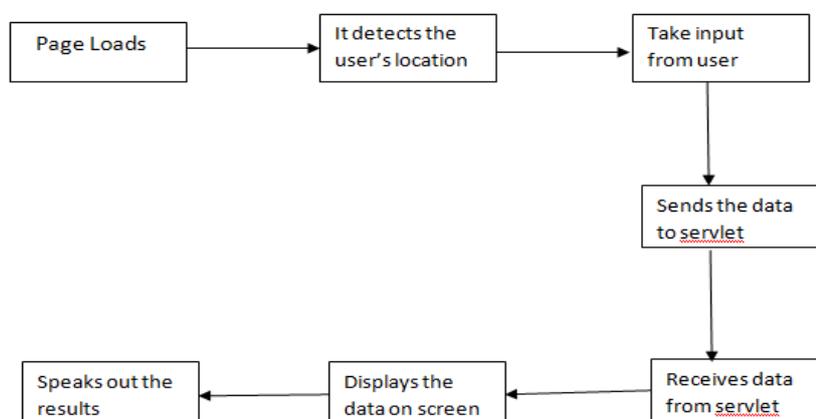

Fig.1. Workflow Diagram of The System

5. Results and Discussions

- It takes voice input from the user and outputs a voice to indicate the route and direction. It will be helpful for blind men to understand as all the input and output will be in voice. It will generate all kinds of possible paths from source to destination so the no of choices will be large. In this application one can know about the estimated time to reach the destination so it will be easier for him/her to decide which path he/she wants to choose.

- Mr. X want to go from Howrah station to Park Street so there are different routes available and different kind of vehicles so Mr X will say source Howrah and destination Park Street and he will be able to see all the possible routes for all types of vehicles. Now he can also make a specific search for only a certain kind of transport like bus.

- Another noteworthy feature of this system is that user will be able to see the fair details of a particular route, average journey time and distance according to the type of transport. So they can now choose between time, comfort, and expense.

Fig.2. Home Page of the Application

Bus Details From Howrah to Park Street :

Bus No.	From	To	Distance(in kms)	Time(in mins)	Fare
C	Howrah	Park Street	11	40	8
AC06	Howrah	Park Street	10	30	20
E1	Howrah	Park Street	10	30	11
AC12	Howrah	Park Street	10	25	15

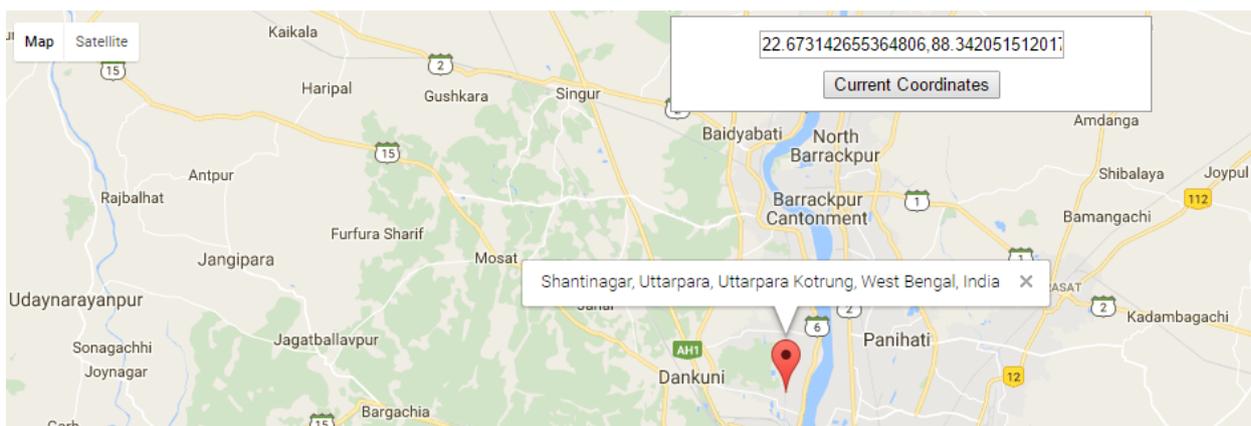Fig.3. Page Showing Details of Transport Available

Fig.4. Page Showing Plot of User Location

Figure 2 shows the home screen, i.e. the first page the user will see he uses the system. This page on loading will speak out the current location of the user. Then the user can speak out his/her source and destination. He/she can also choose the type of transport like bus, train, etc.

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After giving the relevant input when the user speaks 'go' the system processes data and shows the required results.

Figure 3 is the page where the details about the transportation between the given source and destination is shown. The information is shown in tabular format. The system will also speak out all the information contained in the table.

Figure 4 shows the map plot of the current user location. On selecting the particular transport route, the user will be able to see the plot of the route from the source to the destination here.

Conclusion

With increase in world population, traffic and congestion is also increasing, and so the difficulty to find a place is increasing too. Moreover, if a person visits a new place it is really hard for him/her to find a route and available transport to reach their destination. If anyone visit to a new place without knowing the local language then it is a real problem for them to reach the proper destination. This system will be helpful for user to overcome all these flaws. Moreover, human voice is the most useful and easiest way of communication and as this system takes voice as input and gives voice output, it is easy to understand for any one and hence solves the entire problem for a traveller.

It will need a working internet plan and all the information of traffic around the whole world will be available to the user.

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