International Journal of Advanced Engineering and Technology
ISSN: 2456-7655; Impact Factor: RJIF 5.54
Received: 19-01-2019; Accepted: 23-02-2019
www.newengineeringjournal.com
Volume 3; Issue 2; April 2019; Page No. 38-41

Design of travel bot with voice interface based on sentence generation in echo platform using machine learning

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Abstract
Current holiday planner are web based application which provides user's live and most comfortable environment to plan holiday for an individual. However, Web based applications have not friendly to user as it takes long time to understand query of user and preference of user for planning holiday. To solve this problem, we tried to propose a system of planning holiday by interactive bot application with voice interface. The bot will work mainly on artificial intelligence markup language. Chatbot framework provides interactive question answering system with user interface based on voice generation in echo platform. Voice based interface provides next generation chatbot to user in the era of machine learning. Speech to text and text to speech conversion is to be performed and after that based on hybrid filtering approach smart answer can be predicated. We have tried to propose a chatbot system that will compete new era of technology in upcoming years.

Keywords: AIML, machine learning, knowledge-based recommender, echo

1. Introduction
A chatbot could be a service, powered by rules and typically AI that you simply act with via a talk interface. The service may well be any variety of things, starting from purposeful to fun, and it might board any major chat product like face book messenger, text messenger, telegram etc.
Speech is one amongst the foremost powerful kinds of communication between humans; thus, it's the analyzers ambition within the human pc interaction research field to enhance speech interaction between the human and also the pc so as to simulate human-human speech interaction. Speech interaction with trendy networked computing devices has received increasing interest within the past few years with contributions from Google, robot and IOS. As a result of their additional natural than graphic-based interfaces, spoken dialogue systems are commencing to kind the first interaction technique with a machine [1]. Therefore, speech interaction can play a big role in humanizing machines within the close to future [2].
Much analysis work has targeted on up recognition rates of the human voice and also the technology is currently approaching viability for speech based mostly human laptop interaction. Speech Interaction splits into over one space including: speech recognition, speech parsing, human language technology (Natural Language Processing), keyword identification, Chabot design/personality, computer science etc. Chatbot could be a malicious program that has the power to carry a voice communication with human exploitation tongue Speech [16].
Chat bots are a trending topic for quite your time currently and have gotten loads of individuals excited regarding them. Some believe that bots square measure following massive issue and can shortly replace apps, whereas others assume they're simply a fashion, certain to fail [4].
Chatbot awareness is growing. Customer's square measure developing expectations regarding the means brands ought to communicate with them through this new channel. Corporations that square measure creating chat bots accessible to their audience got to meet these expectations. What's the foremost vital issue customers wish once act with a chatbot? What would most encourage them to have interaction with a chatbot? [16]. about 70% of consumers agreed for having quick reply of their query in main domain. The study focuses on understanding this state of Chatbot Market and its future outlook. The target is to grasp and forecast business trends and business sentiments. This survey was conducted over the amount of Nov2016 – Jan2017. 300+ people participated from big selection of industries together with on-line Retail, Aviation, Logistics, provide Chain, e-commerce, welcome, Education, Technology, producing and promoting & Advertising [11].
The analysis is conducted by Mindblower in association with ChatbotsJournal.com. Mindblowers could be a major Chat bots solutions supplier providing its services across multiple industries. ChatbotsJournal.com is that the most active on-line community of Chatbot specialists and enthusiasts [4].

2. Working of Chatbot
Most of the chat bot is working on artificial intelligent markup language widely know as AIML language. Majority of Chatbot will not built by scratching because there is verity of framework and services available. Builder must have to go with developer's talk [4].
Along with the AIML chatbots can be formed in any programming language that supports to develop Web API. Majority of developer choose Node JS of PHP. There is verity of text to speech or speech to text library available or in general bot library are available in Python and java as a free open source software application development. Backend of Chatbot should be more efficient for receiving text message and accordingly intelligent reply and return result back to user. Frontend of Chatbot can be formed or created using any of the chatting application with simple

chat interface where user can post any question or query and bot can reply or respond based on questions asked. Your net server then ought to setup net hooks - URL-based connections between your larva and also the chat platform. net hooks can enable you to firmly send and receive messages via straightforward HTTP requests. All of the thought messengers offer elaborated guides on the way to connect your larva to them.

Fig 1: Working of Chatbot

3. Objective of paper

For building chatbot two approaches can be used. First approach is on rule based approach. In rule based recommendation system developers has to write rules for the system and has to hardcode rules for reply. Second method is by using streaming data of any of the existing system. For example in call center we can log details and store it in data base and by using novel approach of content based recommendation and collaborative recommendation system data can be trainees.

A chatbot may be a standard agent that's ready to act with users in an exceedingly given subject by victimization linguistic communication. The conversations in most chatbot are still employing a keyboard because the input. Keyboard input is taken into account ineffective because the spoken communication isn't natural with none speech communication and a spoken communication aren't close to words. Therefore, specific objective is to style of a chatbot with avatar and voice interaction to form a spoken communication additional alive. This projected approach can return from victimization many API and victimization its output as another input to next API. It might take speech recognition to require input from user, and so precede it to chatbot API to receive the chatbot reply in an exceedingly text type. The reply is going to be processed to text-to-speech recognition and created a spoken, audio version of the reply. Last, the pc can render AN avatar whose gesture and lips are synchronies with the audio reply. This style would build each client service or any service with human interaction will use it to form interaction additional natural. This style is any explored with extra tool like internet camera to form the agent will analyze the user's feeling and reaction.

With this chatbot, the interaction between the larva and user becomes a lot of evident simply because of the countenance. Comments on an enquiry indicates that interactive animated characters could also be helpful for folks with social difficulties [4]. The instruction that's given by chatbot would be a lot of apprehensible and therefore the user can also feel as if they're interacting to human rather than larva.

Additionally, chatbot with avatars have a less expensive price in support of client service with the power to offer for 7x24 hours and can also reply to client inquiries well. This chatbot style may be used as a brand new methodology for elearning, as an enquiry has created it potential for chatbot to show and fascinating with high school students [5].

To make the facial expressions of AN avatar in accordance with a sentence or a word spoken, then within the program given the condition of every of the letters that exist, specifically A-Z and punctuation. From the letters, there square measure letters once avatar should say it with the mouth closed and there square measure some letters that has to be pronounced with less mouth open. There's additionally a condition once sentences contained areas and punctuation given the conditions avatar with closed mouth and stop for an instant so continuing subsequent word. With a program that has been created, the avatar are often given directions to talk with facial expressions per the sentence rather than simply gap and shutting the mouth nonchalantly.

To make this chatbot are often interactively chats with user, the device should capable to show a 3D avatar with a mike to record the user's voice and a speaker to specific the text-to-speech.

4. Research Proposal

In our day to day life we are facing problem with the online website or with travel agents that they are not able to give us proper guideline regarding our holiday planning. In this scenario travel based chat bot is key concept. The main focus of travel based chatbot is first to design an application that receives all necessary inputs by customers and based on the input received botting application will produce relevant answer of customer's query.

In this context system will identify first what are the information barrier and accordingly botting application will ask further query and information gathering should be done. When user has a specific objective related to their history of previous holiday planning botting application will ask about it in order to collect all relevant information from the user for planning next holiday appropriately. In case of user is very new to the system botting application with raising query in general format for collecting information in that context. After information gathering data is sent to services routine for analyzing the information and result is being processed for query related to travel bot.

A complete chat bot is maintained by different modules independently. After building them independently it should transfer information from one to other in order to get efficient reply. The major module of Chat bot is transportation module. The main future of this module is to handle request related to transportation. By asking few questions related to transportation this module stores information about user's preference to travel by train, Bus or by air. This module should be able to handle request related to all history between to points. Along with the major transportation bot should be able to ask questions related to their local transportation. For local transportation pick up and drop location, passenger detail, number of days to hire, preferred language of driver this type of questions can be asked and relevant information can be stored in botting application.

Second module should be related to residence of customer. This module should able to identify which type of resort should be preferred by user, their rating information, their food related question, total number of person occupancy, date of booking, time of arrival, time to leave, any extra facility needed etc. By asking questions above mentioned information can be recorded and accordingly user's

residence module can be designed.

Above mentioned two modules are enough data to process. Chat bot will give assist to user in nice way. In order to improve efficiency of chat bot some personal information can be stored in advance. Like detail of user, their ID proof for traveling, Detail of online payment. This can be securely stored in data base and give user chance to directly manage their booking on availability. This independent module can be design by web based application where user of bot will first create their account and all relevant information can be stored.

Answering module of any chat bot is basically a kind of information filtering system which will filter information by predicting what user wants to have. The information filtering system will identify what user wants to have. A proposed system for above mentioned module is shown in fig 2.User can able to interact with web based application for initial login to chat bot system. The web client will store necessary information and basic detail of user. If user is having any history related to holiday planning, old be stored for better result. User can interact directly with echo device shown in diagram. Initially for training we can use any of the echo platforms like alexa, google assist, apple siri etc,. The speech to text processing should be done on initial step and data can be stored in data base. Now bot is having enough data to process. When query for particular destination is raised, by applying content based collaborative filtering approach initial query can be processed. From many records we need to process any one record at a time. In this scenario TFIDF and restricted Boltzmann machine can generated probability from many inputs. Result produced by Content based recommendation system can be forwarded to Collaborative approach. In this approach system will create array of all user and related activity and later it implements neural network. For training web based application can use basic detail of user, their rating of previous booking can help in predication. Once query has been processed text based information is then converted into speech and user will receive voice in the form of answer to their relevant query.

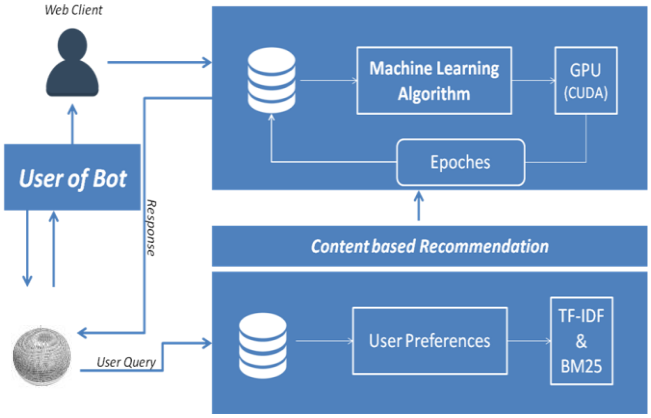

Fig 2: Flow of travel bot

5. Conclusion

From above points we came to know deign of chatbot in echo platform and voice interface technology is possible to implement by using several APIs which are related to agent based technology. Once this chatbot is completed implemented and deployed on mobile with voice interface current market trends says that it has huge impact on market with large number of audience. With above implementation of proposed system by combining content based filtering and collaborative filtering approach recommendation system can be improved. Conventional chatbot are basically working in text based processing and replacement will have huge impact on market. Also by successfully deploying bot on mobile current mobile based application can be replaced with chatbot and new era of next generation technology can be formed.

6. Future work

In current system we try to focus in echo platform but there are problems of noise in echo platform. By using Adaptive Noise Cancellation technique noise in echo platform can be removed. Further call center can have chatbot instead of customer care representative. Another detection of Chatbot can have visual interface with facial recognition can be introduced with web camera. By having expression emotion can be introduce in Chatbot with make user feel live with interacting with chatbot.

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