



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

VOICE ORDERING FOR RESTAURANT USING PYTHON AI

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Abstract: This project is based on AI application development and provide personal assistant using voice recognition or TTS convertor. This program includes the functions and services of: and . in this paper, we introduce a Implementation of a Voice commands System as an PVA By this we propose an application for integration of hotel management systems by using Artificial Intelligence. Digitized management of hotel process includes various processes of restaurant such as Order taking , Updating menus, Bill generation, Location of the restaurant from your Current Location, as weather or traffic conditions, Playing Music calling services, alarm, event handler, location services, checking weather, Google searching engine. Customer Relationship Management system together. This project ensures the quality and speed of service. Implementing this system gives a economically efficient mechanism to provide the customers with a better environment to dine. We are implementing this system using android application. The Application Reduce the manual process as well as the bugs in the manual process also give the automated order system using Voice Assistance.

Index Terms – TTS Convertor – Text To Speech convertor , PVA – Personal Voice Assistant

1. INTRODUCTION

Restaurants are one of the favorite premises. There are many reasons leading to the feeling of dissatisfaction including being entertained late in terms of order taking by the waiter and meals serving. The problem of being late entertained could be solved with help of the improvement in the technologies of communication. In accordance, this study initiates an united and networked system, with the focus is on its ability to solve the above described limitations in order taking .This study terms the system as Digital Ordering System for Restaurant Using Android .It is an combined system, developed to assist restaurant management groups by enabling customers to immediately make orders on themselves. with Digital food ordering system using android application for restaurant. Our Project Goal is to Improve the Management Process Of Restaurant And Consume Less Time for Busy Shedule of day to day life The portable orderingsystem for Android devices. Here the waiter no need to wait for a long time at the table with his notepad, but rather with the hand held device .Speak inorder information on the Android and then directs itto the kitchen in real time for processing. Simultaneously, your Voice assistant accepts the sales information for later billing. It uses WIFI to easilyreach to your most remote corner spot in your establishment. When a waiter gets the completion indications on his station he collects the items and takes them to the table. The waiter can also check on the status of dish and drink orders. At the end of the meal the waiter will have the system print a bill, and he will enter the particulars of payment for it. The management can give discounts. The system keeps trackof the numbers of customers served by each waiter and the amount of money taken by each waiter. The management can view these statistics. the portable ordering system for Android devices. Once the guests wish to leave, the waiter prints the receipt out on his belt printer and processes payment with the handheld unit.

2. LITERATURE REVIEW

2.1 Survey of existing system

- Study 1

Billpro Pocket and Billpro POS for Restaurant Available: [http:// billpro-pos.apponic.com](http://billpro-pos.apponic.com)

This system receives a client's order and prepare a list by means of the designed client's template in the kitchen. The food ordering device is transportable. The waiter takes the client's order and directs it to the client's template in the cook room

- Study 2

LRS Restaurant Server Pager Starter Kit

This system increases the food-ordering service quality in restaurants and minimizes the waiting time of clients. The on-site paging system is used at UHF frequency or the frequency range of 467 MHz for sending the order data.

- Study 3

Implementation of Network-based Smart Order System

The Smart Order System in Restaurants (SOSIR) has been modified to take order from the client's table through RS-232 signal, which is sent to the cashier counter. The cashier counter system is connected to a database. When the clients' orders are sent the cashier counter system will screen and prioritize the orders before sending the information to the kitchen for the chef to cook .

- Study4

Emad S. Othman ."Voice Controlled Personal Assistant Using Raspberry Pi".

The project design involve text to speech. Here whatever the system receives as input

2.2 Limitation on existingsystem

- Order Accuracy Problem
- Not Giving Directions To the Restaurant.
- Not Canceling orders properly.

3. PROBLEM STATEMENT

The usual way of ordering in the restaurants depends on the menu cards of paper based. Waiters use paper to write the order of customers. The records are arranged on paper. As with anything paper based, it is so easy for things to get spoiled by Coffee stains etc., or paper being lost due to fire or accidents or just generally lost. There is waste of time, money, and paper. As traditional menu cards are paper based, any changes that need to be made in the menu card will lead to waste. As it will require reprinting of all the menu cards. Also, for small changes it is impossible to print all the menu cards again and again. There is no power to dynamically make any changes in the menu card. To access a specific record from the stack of papers is not efficient. From the customer's point of view, this system is time consuming.

4. PROJECT OBJECTIVES

Our Project Goal is to Improve the Management Process Of Restaurant And Consume Less Time for Busy Schedule of day to day life The portable ordering system for Android devices. Here the waiter no need to wait for a long time at the table with his notepad, but rather with the hand held device .Speak in order information on the Android and then directs it to the kitchen in real time for processing. Simultaneously, your POS system accepts the sales information for later billing. It uses WIFI to easily reach to your most remote corner spot in your establishment. Once the guests wish to leave, the waiter prints the receipt out on his belt printer and processes payment with the handheld unit much like he would on the system .The Application Reduce the manual process as well as the bugs in the manual process also give the automated order system using Voice Assistance .

3. PROPOSED SYSTEM

A voice assistant is a digital assistant that uses voice recognition, language processing algorithms, and voice synthesis to listen to specific voice commands and return relevant information or perform specific functions as requested by the user.

Execution of heavy AI Algorithms and Python PLP Feature (algorithm) WFST Framework.

Python Language Library like The Speech Recognition library etc.

In this ordering system, the waiters take the orders from the customers by using the PDA. Then, the waiters will send the order to the kitchen via web-based wireless application. The order of the customers will be displayed on a computer screen in the kitchen. The kitchen staff will refresh the list when the food is ready to be served. The waiters will be informed through the PDA. Then, they will serve the food to the respective table. This system will increase the efficiency of the services as the waiters do not need to take an order using paper anymore. The customer sees the categorized menu shown in android on the

table Menu is updated by the chefs with the available quantity. The customers can give the orders through the Android which are wirelessly connected to our system. When the kitchen staff sends a notification that the food has been prepared, the waiters can serve the food at the respective table.

When the need arises for the modifications in the food menu, the manager will be entitled to modify the menu. Then the menu will be updated in the database. The changed menu then gets displayed on the waiter's android device.

Hardware & Software

Software Requirements :

Microphone

Python Libraries

Visual Studio Code for coding

Xamp server

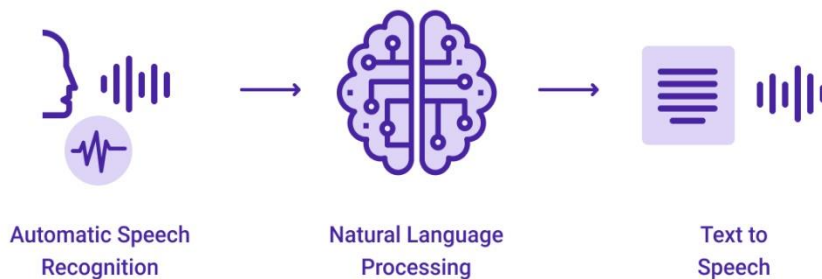
Hardware Requirements :

Laptop

Operating System: Windows 10 Processor: Intel(R) Core(TM) i5

What is text to Speech Technology?

Text-to-speech (TTS) is a type of assistive technology that reads digital text aloud. It's sometimes called "read aloud" technology. With a click of a button or the touch of a finger, TTS can take words on a computer or other digital device and convert them into audio. TTS is very helpful for kids who struggle with reading. A text-to-speech (TTS) system converts normal language text into speech; other systems render symbolic linguistic representations like phonetic transcriptions into speech. Synthesized speech can be created by concatenating pieces of recorded speech that are stored in a database. Systems differ in the size of the stored speech units; a system that stores phones provides the largest output range, but may lack clarity. The quality of a speech synthesizer is judged by its similarity to the human voice and by its ability to be understood clearly. An intelligible text-to-speech program allows people with visual impairments or reading disabilities to listen to written words on a home computer. Many computer operating systems have included speech synthesizers since the early 1990s. A text-to-speech system (or "engine") is composed of two parts a front-end and a back-end. The front-end has two major tasks. First, it converts raw text containing symbols like numbers and abbreviations into the equivalent of written-out words. This process is often called *text normalization*, *pre-processing*, or *tokenization*. The front-end then assigns phonetic transcription to each word, and divides and marks the text into [prosodic units](#), like [phrases](#), [clauses](#), and sentences.



What is Speech Recognition Technology ?

Speech recognition is an interdisciplinary subfield of computer science and computational linguistics that develops methodologies and technologies that enable the recognition and translation of spoken language into text by computers with the main benefit of searchability. It is also known as **automatic speech recognition (ASR)**, **computer speech recognition** or **speech to text (STT)**. It incorporates knowledge and research in the computer science, linguistics and computer engineering fields. The reverse process is speech synthesis. Speech recognition applications include voice user interfaces such as voice dialing (e.g. "call home"), call routing (e.g. "I would like to make a collect call"), domestic appliance control, search key words (e.g. find a podcast where particular words were spoken), simple data entry (e.g., entering a credit card number), preparation of structured documents (e.g. a radiology report), determining speaker characteristics, speech-to-text processing (e.g., word processors or emails, and aircraft).

The term *voice recognition* or *speaker identification* refers to identifying the speaker, rather than what they are saying. Recognizing the speaker can simplify the task of translating speech in systems that have been trained on a specific person's voice or it can be used to authenticate or verify the identity of a speaker as part of a security process. From the technology perspective, speech recognition has a long history with several waves of major innovations. Most recently, the field has benefited from advances in deep learning and big data. The advances are evidenced not only by the surge of academic papers published in the field, but more importantly by the worldwide industry adoption of a variety of deep learning methods in designing and deploying speech recognition systems.

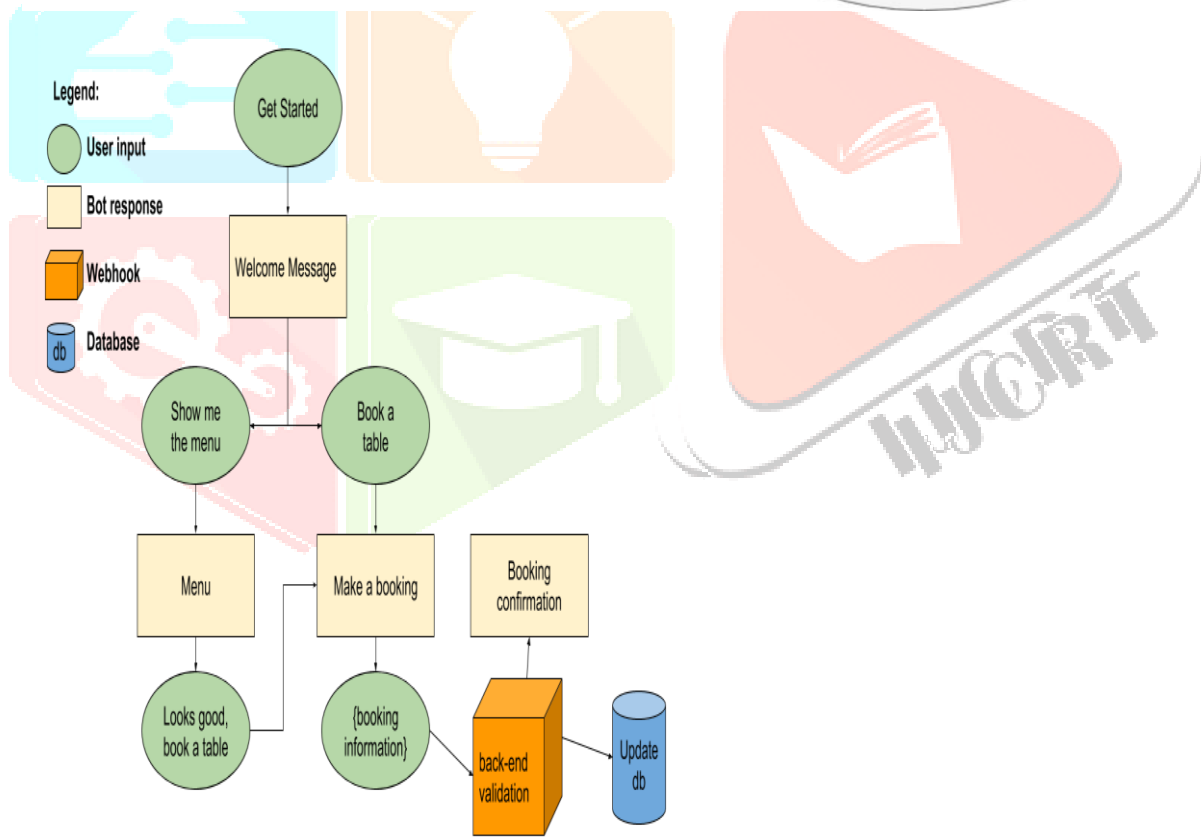
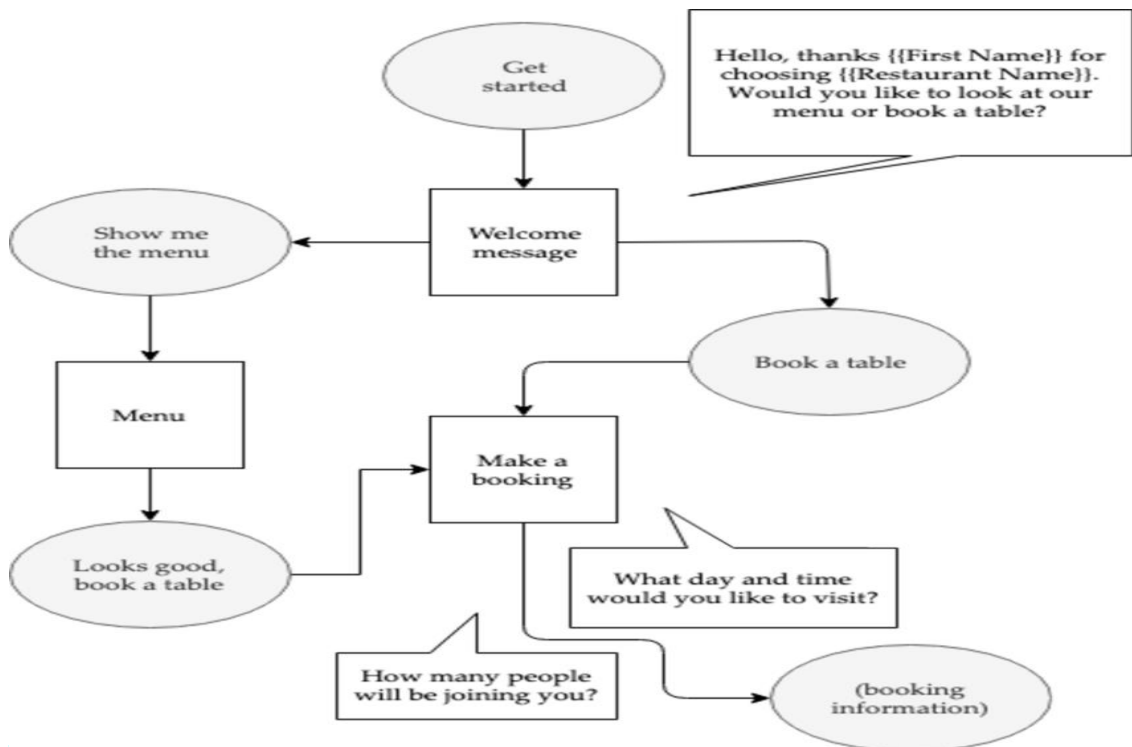
Features of Voice ordering for restaurant using python AI

| Features | Description | Newer Technologies |
|--|---|---|
| Voice Interpretation Subsystem | In this subsystem, the customers can interact with the hotel management application through voice commands which in turn interprets the command by decoding the analog signal using spectrum analyser then the voice command will be transformed into a text string which will be utilized for further process. | Python text to speech pyttx3 to covert the text into the speech also for voice usage used engine.setProperty |
| Voice Ordering Subsystem | In this subsystem the order take place from user table to the kitchen | By using the technologies like play sound by installing play sound using pip install gttS google text to speech it is a library to translate text to speech API |
| Voice Searching Browser/Google subsystem | In this we can search any thing on the google or browser using this | Technologies are pip install Wikipedia, maps |
| Digital menu card | It will show the menu card by using the some technologies | C type it is forgein function library for python it provides c compatible datatype and allows calling function in DLLs or shell libraries GUI architecure |
| Billing process | It is a type of application that enables easier billing transactions. With this system in place, the entire billing process will become simpler and quicker to process. | GUI Billing system in the python |

5. Methodology

- Our Application is build in Python Using Its library and algorithm.
- Uses voice recognition, language processing algorithm.
- Python PLP Feature (algorithm) WFST Framework.
- voice synthesis to listen to specific voice commands and return relevant information or perform specific functions as requested by the user.

Flow and Processing of Algorithm :-



1. REVIEW CONCLUSION.

Nowadays, the innovation of technology brings a lot of convenience to the people. Many company use management systems to grow their business as it is efficient for both sellers and customers. The food and beverage industry also started to follow the trend to use management system for their business. Many restaurants that still using traditional ordering system will face few difficulties and problems such as careless of waiter, ugly handwriting of waiter, give wrong bill payment to the customers. All of these problems will cause the dissatisfaction towards the services of the waiter and the restaurant. This will also affect the brand image of the restaurant. The traditional ordering system also difficult to update the latest information to the customers. The staffs are required to remember the latest information so that they can inform the customers. If the staffs forgot to inform to the customers, the customers might disappoint at the services of the restaurant. In conclusion, this system helps to increase the productivity and efficiency of the restaurant. It reduces the manual work of the staff. By having this ordering system, the customers can make their order through the system. Then, the order will pass to the kitchen. The chef will start to cook when they see the order of the customers. Everything is done by the system and the staff just need to serve the food to the customers and wait for the customers to make the payment.

2. References

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