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### (V- Shopper) A Virtual Voice-powered Shopping Companion

<sup>1</sup>Nikita Anil Manjul, <sup>2</sup>Om Rajendra Shete, <sup>3</sup>Apeksha Suhas Phapale, <sup>4</sup>Prof. S. Y. Mandlik

<sup>1 2 3 4</sup>Dept. Computer Engineering of organization Jaihind college of engineering Kuran Pune

Email: <sup>1</sup>nikitamanjul9370@gmail.com, <sup>2</sup>sheteom28@gmail.com, <sup>3</sup>apekshaphapale6@gmail.com ,

<sup>4</sup>skalokhe92@gmail.com

Peer Review Information	Abstract
<p><i>Submission: 1 Sept 2025</i></p> <p><i>Revision: 28 Sept 2025</i></p> <p><i>Acceptance: 12 Oct 2025</i></p> <p><b>Keywords</b></p> <p><i>E-commerce Web App, Voice Controlled Web App</i></p>	<p>E-commerce has rapidly transformed the modern business landscape, providing a platform for buying and selling goods and services online. With advancements in technology, voice and speech recognition systems have emerged as a convenient way to interact with digital platforms without physical contact. Significant research has been conducted in this field, leading to innovations that enhance user experiences in web applications. Integrating voice recognition into e commerce platforms can significantly improve accessibility, particularly for individuals with visual impairments, making online shopping more inclusive. While most current web applications limit voice commands to product searches, this project aims to expand functionality by enabling users to navigate and interact with various features using voice commands alone. This will greatly enhance usability and convenience for a broader audience. Additionally, the application will be designed as a Progressive Web App (PWA) utilizing service workers, ensuring a seamless, fast, and user friendly experience. Collectively, these enhancements will make the platform more efficient, accessible, and enjoyable for users.</p>

#### INTRODUCTION

With the rapid growth of e-commerce, online shopping has become a widespread trend, with more people turning to the internet to purchase products. However, ensuring that customers can quickly and easily find and buy what they need remains a major challenge for e-commerce platforms. A voice-enabled website enhances the shopping experience by allowing users to listen to product descriptions, making online shopping more interactive and accessible. This is especially beneficial for visually impaired individuals, enabling them to navigate and shop more effectively. Despite the increasing demand for e-commerce applications, many platforms still lack accessibility features, limiting their reach and usability. The Voice-Controlled E-commerce Web App aims to address this issue by integrating voice recognition technology through a Software as a Service (SaaS) model.

This system will provide two key features: text-to-speech and speech-to-text services. These tools will allow users to interact with the application using their voice, converting spoken words into text and vice versa.

By leveraging SaaS-based voice services, the application will avoid unnecessary processing load, ensuring smooth performance and quick response times. The primary goal of this project is to develop an e-commerce platform that is more inclusive and user-friendly, making online shopping accessible to a broader audience.

#### LITERATURE REVIEW

[1] Study & Development of E-Commerce Website: The Papers explains the fundamentals of e-commerce by firstly explaining the concept of e-commerce and then moving forward explaining the modules in an e-commerce platform which include Coding, Seller, Customer,

Management, Delivery.

[2] E-commerce Based Online Shopping For Visually Impaired People Using Speech Recognition: The Paper Explains the amount of difficulty, the visually challenged people face during usage of an e-commerce application and further goes on to explain how different speech recognition algorithms can be used to make it easier for navigation in an e-commerce web app for visually impaired.

[3] Voice Automated Web Application: This paper explains about speech recognition / voice automation which is based on NLP(Natural Language Processing). This paper uses basic languages to build up the e-commerce web app but uses a JavaScript library called annyang.js to create voice automation for the e-commerce application.

[4] A Voice Controlled E-commerce Web Application : This paper firstly talks about the use of e commerce applications and how to make it more accessible by using SRS(Speech Recognition System) ,it further goes on explaining how speech recognition system are classified on various criteria and then goes on to compare various speech recognition systems available in the market and choose the IBM Watson speech recognition system to implement the Text to speech and Speech to text Services.

[5] E-Commerce and Online Payment in the Modern Era [5] : This paper starts with explaining the concept of e-commerce and then further moves on to various methods of online payments that are available in the e-commerce platforms and discusses the safety issue and advantages of them

## OBJECTIVES

- **Improved Accessibility:** Voice-Based Virtual Assistants enhance accessibility for users with disabilities, allowing them to interact with technology without physical limitations
- **Increased Efficiency:** By automating tasks and providing hands-free interaction, VBVAs save time and streamline daily activities, significantly improving productivity
- **Personalized User Experience:** With the ability to learn user preferences and context, VBVAs offer tailored responses, creating a more engaging and satisfying user experience
- **Growing Demand for Smart Technology:** As smart home and IoT device usage rises, developing a VBVA meets the increasing consumer demand for intuitive, voice activated technology solutions.

## METHODOLOGY

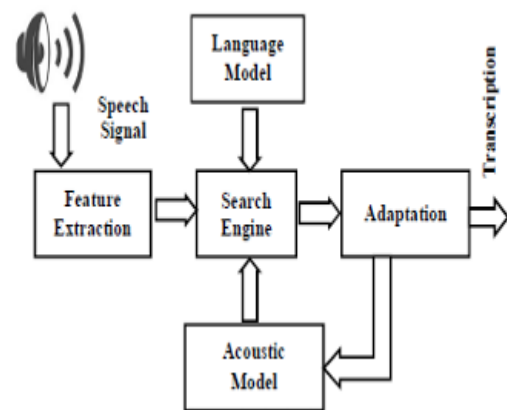


Fig 1: System Architecture

The previous sections discussed the strengths and weaknesses of the existing system. In order to achieve better results the proposed system(Fig 2) is designed in such a way that it consists of all the components of the existing system along with –

**Voice Controller:** This allows the user to perform most of the functions using their voice commands like adding items to cart or deleting them from cart User , Web Application , Functionality are the same as the existing system.

**Speech To Text Service :**These are SAAS(software as a service) which will basically take voice input from the web application and then process it to give a text output.

**Keyword Checking:** In this component the text is analyzed under some set commands which will result in a boolean i.e if true then perform the functionality else go to the text to speech service.

**Text To Speech Service:** This is similar to the Speech to Text Service with the only difference that it converts text to speech.

**Flow of The System:** In the proposed system once the user is logged in into the web app they will have options to either use traditional means or give the voice commands for example is user wants to search for a black shirt ,they simply say “show black shirts” the web application passes this input to the Speech to Text Service and converts this speech input by the user to text by the speech to text algorithm of the service that is being used. Now once the web application gets the text input it then does the keyword checking

like the words said by the user match with any of the products present in the application or not. If true the system then searches for the desired items and once the closest match is found it returns the output to the web application. if the Keywords are not understood then the user is alerted by the text to speech system about the error.

## CONCLUSION

We implement a voice-based e-commerce web application with a view to leverage accessibility to web applications for the visually-impaired users such that they can use their voice as a means to operate the application. Voice enabled applications can enhance usability for all users by promoting ease of interaction and multi-tasking, and support a lean environment where users can make requests using natural language.

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