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Vocal for Local

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Abstract:-

Vocal for local is an e-commerce website which is developed using the concepts of artificial intelligence and machine learning, the prime focus of this project is to allow small business which might or might not exist on the internet to promote their product and services in their local areas, the idea of this project was enlightened during the phase of covid-19 when the lockdown was announced and a lot of business was suffering to survive. This website contains all the features that could make it user-friendly and easy to operate, in this project concept of collaborative filtering has been included using the k-nearest neighbor algorithm for recommending products to the user, it also contains a trending product section in which products are sorted based on ratings and reviews they got, for filtering the reviews on products we have implemented a fake review system using naive bayes algorithm that could filter the abusive comments and reviews and help keep the website safe from content like that, to ensure customer support a Chabot has been integrated that will assist users regarding queries they might have Chabot is developed using AI ML moreover, geolocations of users and business owners are taken for the recommendation of products nearby them, to access the products user can search not only by typing but also could search using voice commands, for keeping records of products, users, business owners MySQL database has been used. By implementing all the above modules this website serves the purposes of being a digital platform where one can promote their business ideas in their locality and supports the campaign made in India.

Keywords: Haversine Formula, K-Means Naïve Bayes, Chatbot, Location, Recommendation

Introduction:-

In this critical situation of COVID -19, all over the globe, every person is bound to stay home, and the government has to announce lockdowns that result in a loss for many small or big businesses around us. This is a project which developed in the domain of web development but it is combined with the concepts of AI and ML, that ease up the process for a user to buy and sell quickly.

The prime focus of this project is to help local providers to reach customers in their area, to do so "geo-location" tags are used which take the location of the user whenever a user logs in, users will be recommended with shops and businesses according to the location. For searching a particular product or service user is allowed to search using text as well voice command. Then there is a section where the user can go through recommended products, for achieving this a recommendation system has been used which is developed using the concept of collaborative filtering in which the "k-nearest neighbour" algorithm is used. A AIML chatbot has been integrated which serves the purpose of assisting customers and their queries. A trending page is included which filters the products and ranks them based on rating and reviews they received. For preventing users from misleading reviews a fake review system is also developed which is intended to search for fake reviews and remove them automatically.

Literature survey:-

1. Recommendation system:

Collaborative filtering is a method of recommendation which is popular for its excellent recommendation performance, but some of the researchers have proved that CF is vulnerable to privacy leakage of users because of k-nearest neighbouring (KNN) attacks. To counter this problem, differential privacy (DP) has been implemented for privacy preservation in recommendation systems; however, the pre-existing differentially private CF recommendation systems could lead to performance degradation of recommendation systems.

To resolve performance issue a differentially private user-based CF recommendation system has been proposed which is based on K-means clustering (KDPCF).

KDPCF algorithm flow diagram.



1.2 Performance analysis and evaluation:

For performance analysis two datasets were used Movielens, Netflix these datasets are used generally for recommendation systems, but a minor part of the dataset is used for evaluation as it is a very large dataset. Now, this system is compared with a system that was proposed by Zhu et al. (2013) and another system that was proposed by Feng et al. (2016), using different performance indicators. For comparison with the system proposed by Zhu et al. (2013), the mean absolute formula was used as a performance indicator. For comparison with the system proposed by Feng et al. (2016), the mean absolute formula was used as a performance indicator as follow

$$MAE = \sum_{u \in U, i \in I'} |r_{ui} - r^*_{ui}| / |I'|$$

for comparison with the system proposed by Feng et al. (2016), the mean absolute formula was used as a performance indicator as follow

$$Recall = \sum_{u \in U} |Ru \cap Tu| / \sum_{u \in U} |Tu|$$

$$Precision = \sum_{u \in U} |Ru \cap Tu| / \sum_{u \in U} |Ru|$$

for evaluation of this system, the value of k is kept as $k=2 \lfloor \frac{1}{\sqrt{2}} \rfloor$, in recommendation system and kdpcf, and then it is compared with the following schemes

CF: it is the initial user-based collaborative filtering recommendation system that does not have a differential privacy guarantee.

PNCF: it stands for Private Neighbor Collaborative Filtering recommendation system which was proposed by Zhu et al. (2013). in this local sensitivity is used.

DPCF: DP is directly applied to collaborative filtering recommendation algorithms and escapes the process of optimization.

2. Chatbot:-With improvement in computer technologies such as AI and ML, it can help in providing support in better ways for learning and implementing. Chatbots have been an asset for interpersonal communication and different applications in human behaviour. The use of chatbots has increased with time for shopping, educational courses, messaging and other entertainment purposes and it also increases student's efficiency of learning. according to the author, the chatbots are divided into 89 unique categories by language, topic and developer platforms.

Chatbot also known as a virtual agent or chatterbot, ELIZA was the first-ever chat robot in which a keyboard or pattern matching mechanism was used to identify patterns and give related responses to users, that mechanism was known as the ELIZA mechanism.

2.1 Research purpose:

Using scoping reviews previous studies have examined the different use of chatbots, such as Abd-alrazaq et al. (2019) proposed the use of chatbot in the area of mental health.

Bendig et al. (2019) thought of using chatbots for clinical psychology and psychotherapy for the betterment of mental health and these proposals made chatbots an important trend in research.

2.2 Research methods:

resources- since 2000 sentiment analysis became a trend and an important subject of study. for its complete study, a web of science database was searched, the search was conducted on August 8, 2020, and the top 100 articles were analysed using software called VOSviewer.

2.3 Coding schemes:

For analyzing trends of research of chatbots the coding schemes were determined by using the Technology-based learning review (TLR) model.

2.4 Types of Chatbots:

five Types of Chatbots were adopted in this study as follows: CALM SYSTEM, MOBILE CHATBOT, FILEBOT, NDLs tutor and Dina.

Study shows that only a few from above were chosen for human behavior research. The requirement of automated response generation for human and machine interaction has increased and been in focus. Conventional chatbots are developed based on tree structures that are only capable of producing a pre-scripted response. Since the Transformer based models such as BERT, GPT came into the picture, deep learning-based language models achieved success in the field of natural language processing (NLP). A GPT based Chatbot model in which PERSONAL CHAT dataset (Zhang et al., 2018) has been used, this dataset consists of additional personality that serves as consistency information.

2.5 Parts of the model

- Training with personality
- Generative Loss
- Distraction Loss

3. Speech to text

The prime focus is to recapitulate and match up to different speech recognition systems as well as approaches for the speech to text conversion and identify research topics and applications which are at the forefront of this exciting and challenging field.

3.1. Research purpose:

Speech to Text conversion takes input from the microphone in the form of speech & then it is converted into text form which is displayed on the desktop. Speech processing is the study of speech signals and the various methods which are used to process them. In this process, various applications such as speech coding, speech

synthesis, speech recognition and speaker recognition technologies; speech processing are employed. Among the above, speech recognition is the most important one.

3.2 Research Methods:

There are four types of speech, speaker model and Vocabulary used Isolated Word: Isolated word recognizes attain usually, This is having "Listen and Non Listen to state". Isolated utterance might be a better name for this class. Connected Word: Connected word systems are similar to isolated words but allow to divide or separate sound to be "run together minimum pause between them. Continuous speech: Continuous speech recognizers allow users to talk almost naturally. Recognizer with continuous speech capabilities are some of the most difficult to create because they utilize unique sound and special method to determine utterance boundaries Spontaneous speech: An ASR System with spontaneous speech ability should be able to handle different words and a variety of natural speech features such as words being run together. Speaker independent models: It recognizes the speech patterns of a large group of people. This system is most difficult to develop, most expensive and offers less accuracy than speaker-dependent systems. However, they are more flexible Speaker dependent models: These systems are usually easier to develop, cheaper and more accurate, but not as flexible as speaker adaptive or speaker-independent systems. They are generally more accurate for the particular speaker, but much less accurate for other speakers.

4. Fake Review System:- The process of case study is influenced by online consumer reviews grows, deceptive reviews are a worsening problem, betraying consumers' trust in reviews by pretending to be authentic and informative. This research identifies factors that can separate deceptive reviews from genuine ones. First, we create a novel means of detection by contrasting authentic versus fake word patterns specific to a given domain (e.g., shopping website). We use a survey on a crowdsourcing platform to obtain both genuine and deceptive reviews of online websites. We learned the word patterns from each category to discriminate genuine reviews from fake ones for positively and negatively evaluated reviews, respectively. We also use our procedure to analyze more than 250,000 real-world shopping website reviews to detect fake reviews and identify the shopping website and review characteristics influencing review fakery in the industry (e.g., star rating, franchise shopping website, product price, review timing, and review rating).

4.1 Research purpose:

Online consumer reviews are important for both consumers and companies. Companies know that online reviews and recommendations affect product sales. The influence of online reviews is important. These reviews reflect real consumers voicing their own opinions about their purchase and consumption experiences. Yet, reviews can be fake, such as when companies pay some consumers to post positive reviews for their brand and negative reviews against competitors.

4.2 Research Methods: When doing so, one reliable finding is that fake reviews tend to have more positive or more negative words than genuine reviews, given that fake review writers tend to exaggerate their sentiments (Li, Ott, Cardie, & Hovy, 2014; Zhou, Burgoon, Twitchell, Qin, & Nunamaker Jr., 2004).

System Architecture

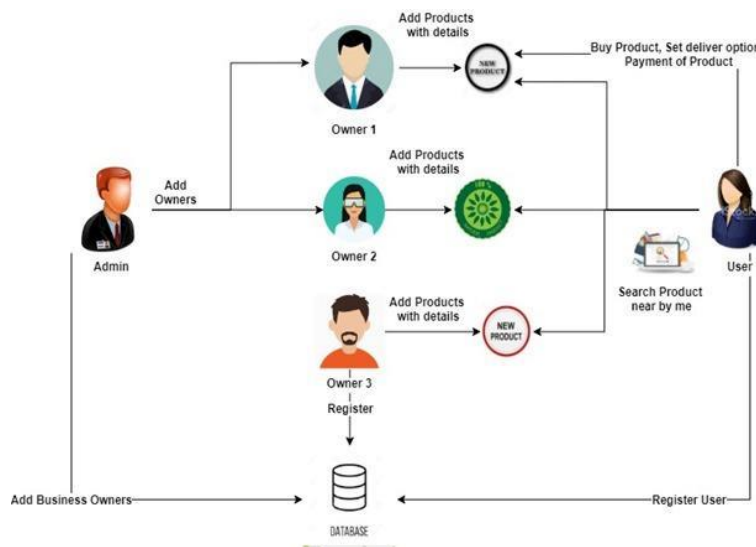
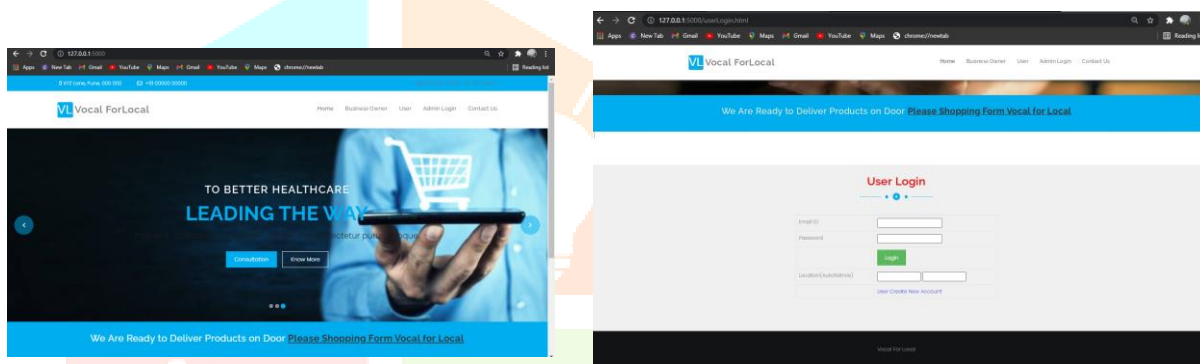


Figure: System Architecture



Proposed system

A website is designed which serves the purpose of connecting sellers, retailers and customers with available resources.

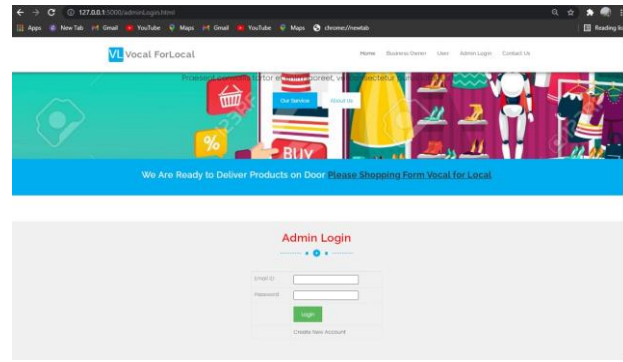
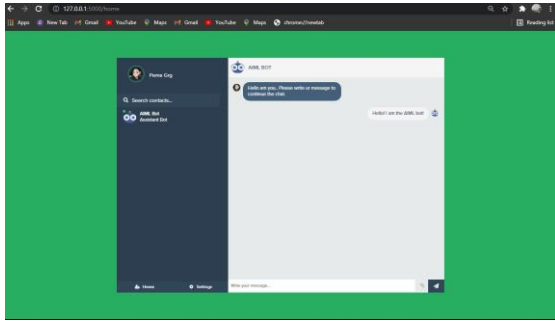
On the index page, a trending page is there which shows the trending products based on rating and reviews of the particular product and it has options for user sign up, the business owner signs up and admin login.

When the user signs up user can log in and while logging in user location will be fetched all the shops or businesses nearby will be shown to the user, after the user gets authenticated,

He can see recommended products for which a recommendation system is developed using the concept of collaborative filtering in which K-nearest neighbour algorithm is used, then a search bar is there using which the user can search for a particular product through text or voice command. Once a user finds the expected product he can place an order by clicking on the add cart option and once payment is done the order will be placed.

For user assistance a chatbot is integrated which is developed using AI ML, chat helps to solve users queries or issues. After purchasing a product user will be eligible to give reviews and rating based on their experience, for filtering fake reviews a fake review system has been developed using the concept of machine learning in which the Naive Bayes algorithm is used it filters the fake reviews and removes them automatically and user can log out whenever he wants. A business owner can sign up and log in once the owner gets authenticated he can see an option to add, remove and list of products that are uploaded, and the owner can also see the orders received and can accept

or deny the orders after that he can sign out. Then there is admin login, Here the admin has all the access to the website and can see all the users and businesses added.



Conclusion:

The developed system is the combination of web development Artificial intelligence and machine learning. The modules are developed using different concepts and algorithms of machine learning such as Naive Bayes, k-nearest neighbor etc, for handling database MySQL has been used.

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