

**KAMMIAN : E-COMMERCE WEBSITE FOR ARTISANS AND POTTERY
MAKERS WITHOUT ANY INTERMEDIATORS**

PHASE I REPORT

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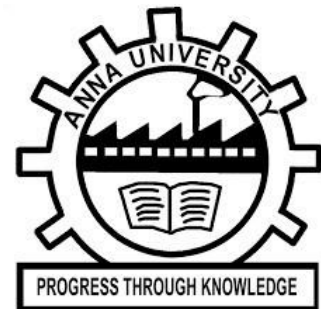
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BONAFIDE CERTIFICATE

Certified that this Report titled “**KAMMIAN E-COMMERCE WEBSITE FOR ARTISANS AND POTTERY MAKERS WITHOUT ANY INTERMEDIATORS**” is the Bonafide of **MALLESH U(210701145)**, **NARESH KUMAR V (210701323)** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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ABSTRACT

Kammian is an innovative web application developed to empower local artisans in Tamil Nadu, particularly pottery makers, by addressing the significant challenges they face in accessing broader markets and achieving fair compensation for their craftsmanship. Artisans often struggle with limited market visibility, reliance on intermediaries, and the high costs associated with marketing platforms. Kammian seeks to resolve these issues by providing a dedicated e-commerce platform where artisans can directly showcase and sell their products to customers. This approach not only eliminates intermediaries but also reduces operational costs, ensuring that artisans retain a larger share of their earnings. The platform leverages advanced real-time database capabilities to deliver a seamless, secure, and user-friendly e-commerce experience. Customers benefit from access to a curated selection of high-quality, handcrafted products at affordable prices, coupled with minimal delivery times to enhance satisfaction. To further support the artisans, Kammian integrates a robust AI-powered chatbot specifically designed for the sellers' page. This chatbot acts as a virtual assistant, enabling artisans to manage their profiles, address customer inquiries, and receive tailored guidance to enhance their business operations effectively. This paper explores the development, architecture, and implementation of Kammian, emphasizing its unique features, such as direct-to-customer sales, real-time support mechanisms, and an AI-driven assistant tailored for artisans' needs. Additionally, the platform aims to foster economic growth within local communities by streamlining the business operations of small-scale artisans, thereby creating a sustainable and inclusive marketplace. By bridging the gap between traditional craftsmanship and modern technology, Kammian has the potential to revolutionize the e-commerce landscape for small-scale businesses. It not only empowers artisans by providing them with a platform for economic independence but also enriches customers' shopping experiences by offering authentic and high-quality products that celebrate the rich cultural heritage of Tamil Nadu.

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LIST OF ABBREVIATIONS

SNO	ABBREVIATION	EXPANSION
1	AI	Artificial Intelligence
2	NGO	Non Governmental Organization
3	AWS	Amazon Web Service
4	JSON	JavaScript Object Notation
5	GPT	Generative Pre-trained Transformer
6	flutter SDK	Software Development Kit
7	GPS	Global Positioning System
8	ML	Machine Learning
9	QR	Quick Response
10	HTTP	Hyper Text Transfer Protocol
11	POST	Power On Self Test

CHAPTER 1

1.INTRODUCTION

1.1 GENERAL

Local artisans and pottery makers represent a treasure trove of cultural heritage and craftsmanship, playing a significant role in preserving traditional art forms. In regions like Tamil Nadu, where traditional arts have deep historical roots, artisans often possess unparalleled skills and expertise passed down through generations. These artisans, however, face substantial challenges in sustaining their livelihoods due to limited visibility and access to broader markets. Despite the demand for authentic, handmade, and environmentally friendly products, many artisans struggle to connect with potential buyers who value their work.

The barriers to market access for artisans primarily stem from their geographical isolation. Most artisans and pottery makers live in rural villages and small towns with underdeveloped infrastructure, which makes reaching larger urban markets both expensive and time-consuming. To sell their products, many artisans must undertake long and arduous journeys to cities and towns, often with no guarantee of a successful sale. These trips not only impose financial strain but also take artisans away from their core work—creating the products that define their livelihoods.

Alternatively, some artisans collaborate with intermediaries, such as companies or marketing platforms, to sell their products. While this approach provides a channel for sales, it often comes at a significant cost. These intermediaries typically purchase products at low prices, resell them at marked-up rates, and retain a substantial portion of the profits. This system not only reduces the financial returns for artisans but also detaches them from their customer base, limiting their ability to build direct relationships and understand customer preferences. With the rapid advancement of technology, mobile and e-commerce applications have emerged as game-changing tools for connecting buyers and sellers.

This paper introduces a unique and dedicated e-commerce platform designed exclusively for pottery makers and local artisans. Unlike general-purpose e-commerce websites, this platform caters specifically to the needs of artisans by creating a space where they can showcase their products and sell directly to customers. By eliminating intermediaries, the platform ensures that artisans receive fair compensation for their work while providing customers with authentic, high-quality, handmade products at competitive prices.

1.2 OBJECTIVE

1. Empower Artisans and Pottery Makers: To provide a dedicated e-commerce platform that allows artisans and pottery makers to sell their products directly to customers, bypassing intermediaries and ensuring fair profits.

2. Preserve Cultural Heritage: To promote traditional Tamil Nadu crafts by giving artisans a digital space to showcase their handmade products, educating customers about the cultural and regional significance of these crafts.

3. Facilitate Direct-to-Customer Sales: To create a seamless, secure, and user-friendly platform that connects artisans with customers, reducing logistical challenges and offering an authentic shopping experience.

4. Integrate Technology for Artisan Support: To leverage advanced technologies, including real-time databases and AI-powered chatbots, to streamline operations for artisans, simplify processes, and provide instant support.

5. Promote Environmental Sustainability: To align with the growing preference for eco-friendly and sustainable products by enabling easy access to traditional, handmade items crafted by local artisans.

6. Enhance Market Accessibility: To eliminate geographical barriers, enabling artisans from rural and small-town areas to access larger domestic and international markets.

1.3 EXISTING SYSTEM

The frontend of the Lokart mobile application was developed using the Flutter SDK, and the backend through Google Firebase to guarantee complete cross-platform compatibility along with easy performance and real-time data synchronization. The application integrates a user authentication system with multiple channels, including email, mobile numbers, and Google accounts, by having it verified via Firebase. Buyers can browse and purchase products; sellers can upload and manage their listings after authentication. The app uses the location services, whether GPS or manual inputting. This will provide users with localized products for purchase. The collaborative and content-based recommendation algorithms analyze user preferences to suggest relevant items, thus increasing user engagement and product visibility. Sellers can interact directly with the buyer through contact information shared after placing an order, hence ensuring smooth communication and transaction processes.

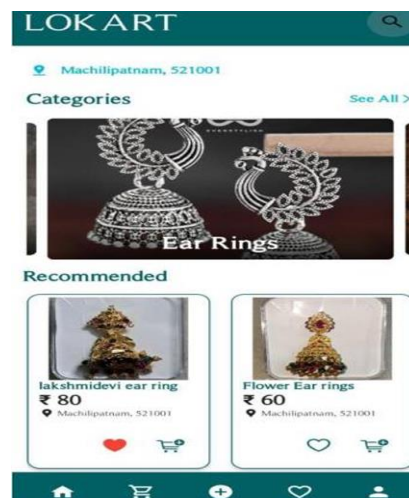


Figure 1

Figure 1 Illustrates the user interface design of LokArt e-commerce, which boasts user-friendly layout with a motive to promote artisan-made products. Within the header, name and location of the user from Machilipatnam, 521001, and a search icon is placed at the topmost position for easy navigation. Underneath, there is a featured category, Ear Rings,

with an image and a "See All" option to explore other categories. In the "Recommended," one will find few of the products with names like Lakshmidēvi Ear Ring, price, and location of the seller along with interactive icons to add them into favorites or cart. Lastly, footer still accommodates navigation icons for easy access to any particular section of the website.

1.4 PROPOSED SYSTEM

To help more local artisans with reaching a wider market and earning fair compensations for the products, this proposed system also plans to create a strong mobile e-commerce platform. The platform, which is initially termed as "Lokart, will serve as an online marketplace that the artisans can utilize for selling their handmade crafts directly to the customers. The system aims to close the gap between artisans and buyers through modern technology, eliminating middlemen, and providing an appropriate way for artisans to maximize their earnings.

The mobile application will support multiple languages to reach a wider user group: rural and regional artisans. The platform will include features that would help an artisan simply upload images of his or her products, descriptions, and prices, so the artisan can easily manage the virtual storefronts. There will also be other features like inventory management, order management, and payment integration to make the selling process easier for artisans while doing away with the challenges concerning their logistics. The presence of an AI-powered chatbot will be quite beneficial to enhancing the seller experience by providing instant support for account management, product uploads, and buyer inquiries.

For the buyer, the system will provide personalized recommendations based on history of browsing, preferred items and trends. The advanced filtering and searching options will enable the discovery of unique crafts and facilitating grassroots artisans with a more seamless and simpler process. The platform will ensure transparency at its best, keeping buyers informed on the origin, material, and cultural significance of the purchase item.

Finally, the proposed system will integrate analytics to monitor performance and produce insights. Artisans will get detailed information on sales trends, customer preference, and feedback and will be able to provide enhanced offerings to raise profitability. In the long-term, "Lokart" aims to create an accessible online commerce marketplace that uplifts local artisans and enhances the cultural enrichment of the society.



Figure 2

Figure 2 A "Cart" interface of the LokArt e-commerce site displays all the products selected by the user for purchase. The screen contains the name of the product (Lakshmidevi Ear Ring), amount of INR80, and its current status marked as "Ordered." With this interface, the customer can see a "delete" option to remove items from the cart to enable flexibility in managing orders. A big, bold "GO TO ORDER" button at the bottom makes it easy to quickly move to the next step in the purchasing cycle, improving the user experience; simple and intuitive design from selection to order confirmation.

CHAPTER 2

2. LITERATURE SURVEY

1. The "**E-commerce for Artisans**" project aims to empower artisans by providing a digital platform to showcase and sell their handcrafted goods on a global scale. This initiative bridges the gap between craftsmen and consumers by offering tools for online shop creation, inventory management, order processing, and secure payment options. Consumers can explore a wide range of handmade products, engage directly with artisans, and support sustainable craftsmanship and cultural heritage. By fostering direct interactions and promoting the value of handmade goods, the project encourages economic sustainability for artisans while preserving traditional artistry.
2. The **Tribal Welfare Application** by S. Uthayashangar, S. Sowmiya, K. Dheebhika, and V. Swagatha aims to foster the social and economic development of tribal groups by connecting local artisans with agencies under the Ministry of Tribal Affairs (MoTA). This smartphone application allows artisans to showcase their creations through photos, enabling visibility and support from MoTA. It features a chat function to facilitate communication between tribes, agencies, and the general public, promoting collaboration in branding, marketing, and skill training. Additionally, the platform provides a space for artisans to address queries related to training and other developmental opportunities, enhancing their overall growth.
3. The study by Surjandy and Cadelina Cassandra explores the impact of chatbot service quality on customer trust, satisfaction, and loyalty in e-commerce during the post-pandemic new normal. Analyzing data from 205 respondents through structural equation modeling and partial least squares (SEMPLS), the research identifies seven key factors that positively influence these outcomes. Notable findings include the significant effects of response time on trust, usability on satisfaction, and reliability on trust, loyalty, and satisfaction. However, the study also highlights seven factors that showed no significant.

4. The study by Sushant Mimani, Rakesh Ramakrishnan, and Piyush Rohella explores the role of Artificial Intelligence (AI) in enhancing the efficiency of e-commerce operations. AI improves customer experiences by providing advanced search functionalities, personalized product recommendations, and better inventory management. Intelligent bots interact with customers to answer questions and guide them toward products based on past purchases. Additionally, AI-powered payment systems streamline transactions, reduce security risks, and offer a better user experience. These AI-driven innovations help e-commerce stores remain competitive, thrive in mature markets, and maximize sales.

5. The **Hebron chatbot**, created by Victoria Oguntosin and Ayobami Olomo, is a web application developed for the Covenant University Community Mall (CUSM) to enhance the shopping experience through intelligent and interactive features. Built with Python, React.js, and MySQL, the chatbot facilitates streamlined user interactions and collects valuable e-commerce data. It provides personalized product recommendations, offers 24/7 customer support, and efficiently manages product queries, all contributing to a more engaging and efficient shopping journey for users.

6. The paper by Kanika Singhal, J.N. Singh, and Vishnu Sharma explores the use of artificial intelligence (AI) and machine learning (ML) to create an autonomous digital marketing framework that enhances traditional marketing methods by predicting and addressing consumer demand. This data-driven approach utilizes ensemble machine learning techniques, such as decision tree algorithms, to optimize decision-making. The study analyzes a dataset of 6,561 data points to refine cost-effective strategies, maximize profits, and identify patterns in pricing data.

7. The article by Meenu Gupta, Rakesh Kumar, Abhinandan Sharma, and Anand S. Pai explores the integration of artificial intelligence (AI) in social media marketing and its impact on the social sphere. AI enables companies to analyze large datasets for targeted

advertising, improve engagement by understanding consumer perceptions, and enhance business efficiencies, all while cutting costs and increasing profits by reducing risks. It also plays a significant role in protecting user data and privacy. However, the article warns that over-reliance on AI in social media interactions could negatively affect genuine social engagement.

8. The **Native Nest** study proposes an online platform aimed at supporting the commerce of Ooty District by connecting tribal artisans with customers. The platform provides easy access to product information through QR codes, simplifying the online purchasing process. By offering broader market access, **Native Nest** empowers tribal communities, promotes cultural heritage, and fosters socio-economic development. It facilitates cultural exchange and enhances the visibility of tribal products, contributing to both economic growth and the preservation of traditional craftsmanship.

9. Haiefn Wang's study presents a personalized online shopping information filtering system designed for e-commerce platforms, aimed at improving user experience through accurate recommendations based on user inputs. The system's performance tests show varying effectiveness in matching different content types, including text, images, videos, and news. By catering to diverse user needs, the system enhances the relevance of search results and overall service quality, ultimately optimizing the online shopping experience and making it more personalized for users.

10. The research by Volkan Altintas and Murat Kilinc focuses on automatically categorizing Turkish e-commerce product reviews using machine learning algorithms and transformer-based models, particularly BERT. Using a dataset of Turkish comments on phones, computers, and headphones from Amazon.com.tr, the study applies various classification models, including Naive Bayes, Linear Support Vector Classifier, Random Forest, and a pre-trained and fine-tuned BERT model, specifically BERTurk.

CHAPTER 3

3. SYSTEM DESIGN

3.1 GENERAL

3.1.1 SYSTEM FLOW DIAGRAM

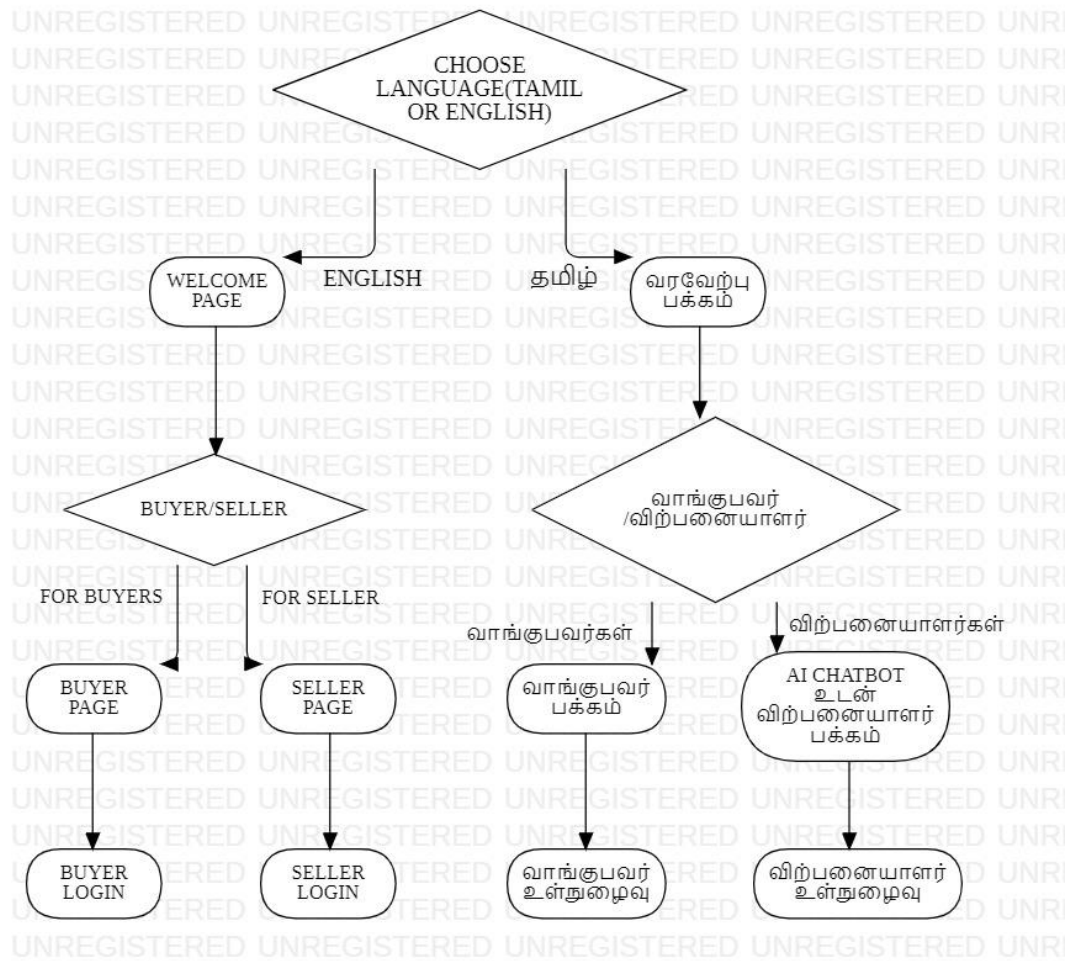


Figure 3

3.1.2 SEQUENCE DIAGRAM

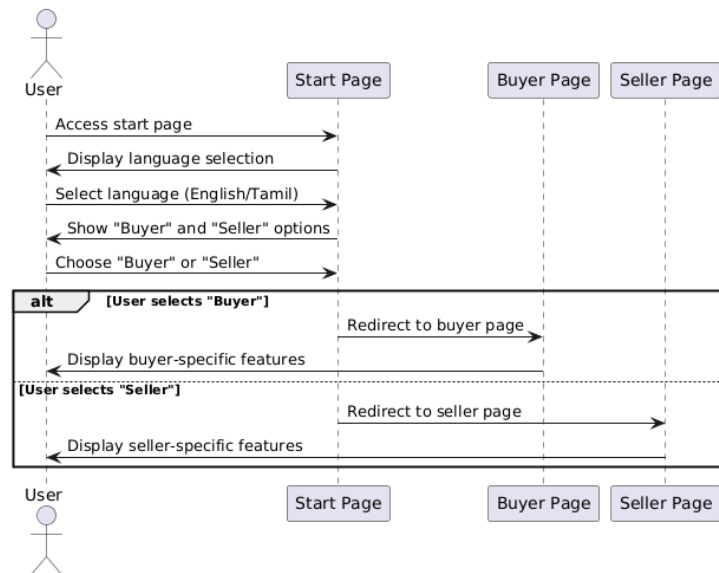


Figure 4

3.1.3 CLASS DIAGRAM

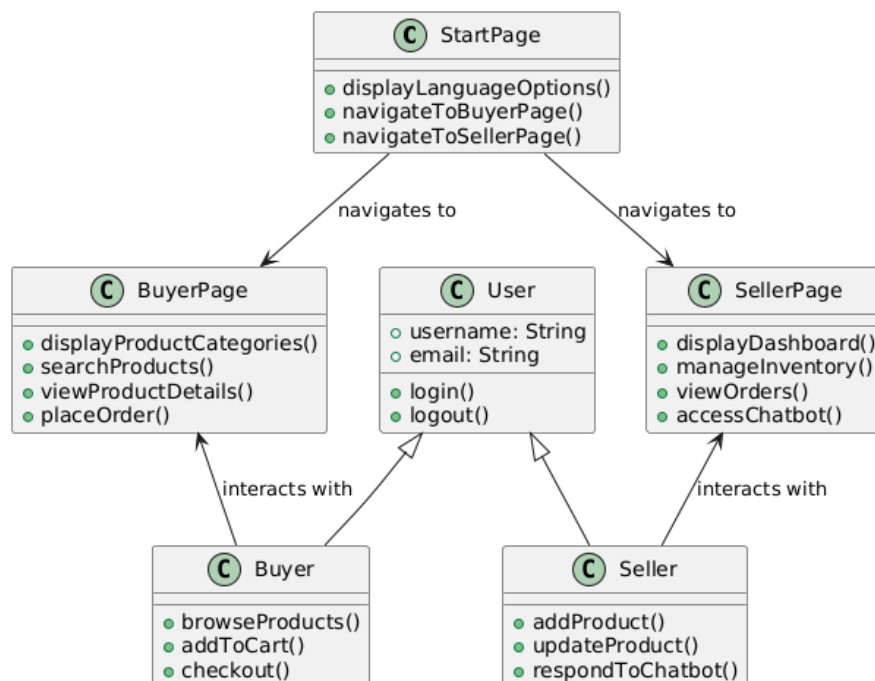


Figure 5

3.1.4 USE CASE DIAGRAM

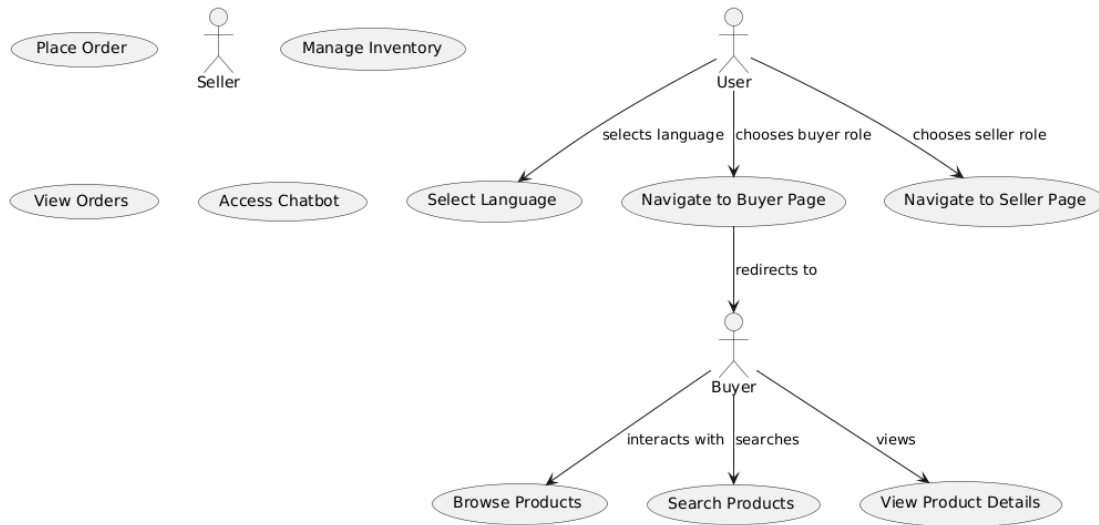


Figure 6

3.1.5 ACTIVITY DIAGRAM

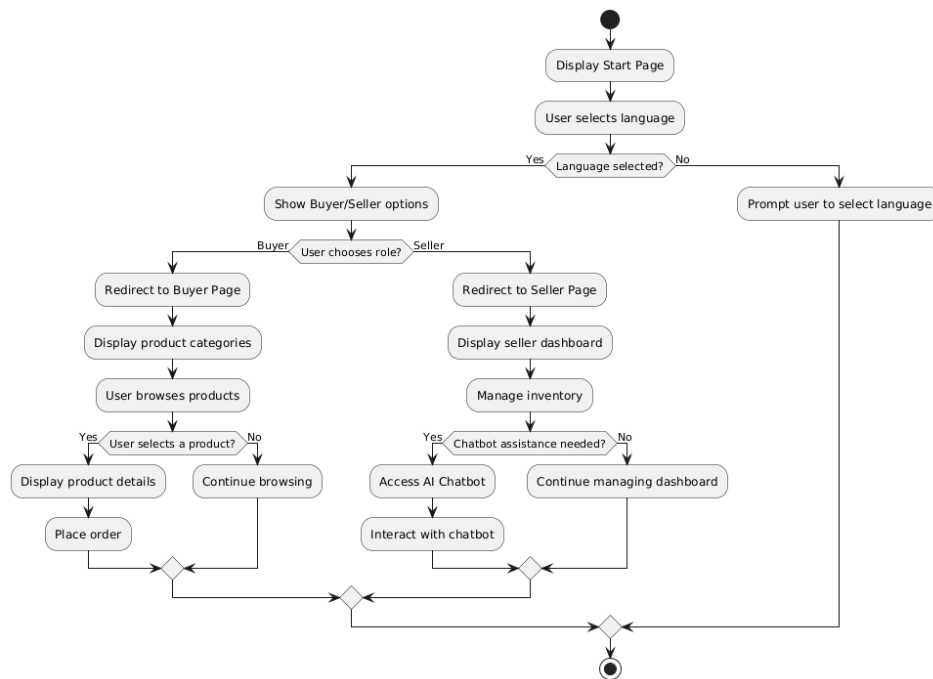


Figure 7

3.1.5 COMPONENT DIAGRAM

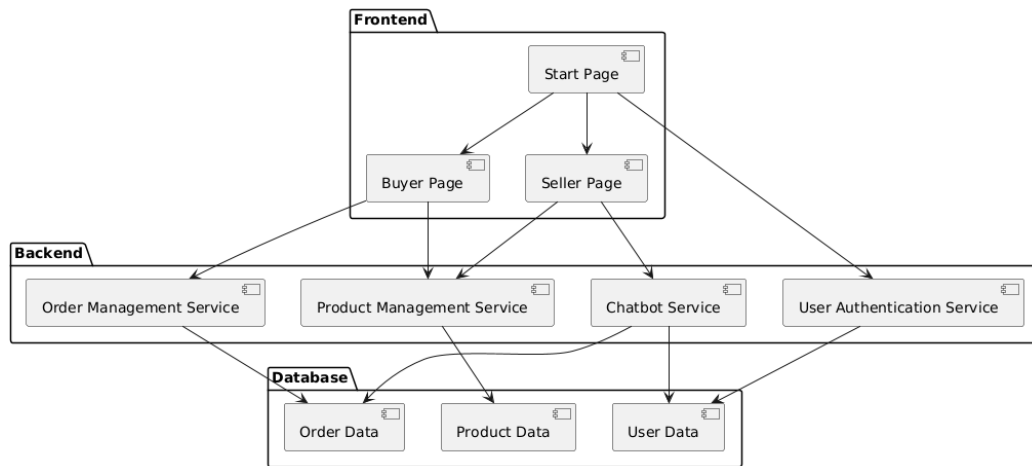


Figure 8

3.1.6 COLLABORATION DIAGRAM

```

PlantUML 1.2024.8
[From string (line 34) ]

@startuml
actor User as U
participant "Start Page" as SP
participant "Buyer Page" as BP
participant "Seller Page" as SEP
participant "Chatbot Service" as CS
participant "Product Management Service" as PMS
participant "Order Management Service" as OMS

U -> SP : Access start page
SP -> U : Display language options
U -> SP : Select language
SP -> U : Display Buyer/Seller options
U -> SP : Choose "Buyer" or "Seller"

alt Buyer Flow
    SP -> BP : Redirect to buyer page
    U -> BP : Browse products
    BP -> PMS : Request product list
    PMS -> BP : Send product list
    U -> BP : View product details
    BP -> PMS : Get product details
    U -> BP : Place order
    BP -> OMS : Process order
    OMS -> BP : Confirm order
else Seller Flow
    SP -> SEP : Redirect to seller page
    U -> SEP : Manage inventory
    SEP -> PMS : Update inventory
    U -> SEP : Request chatbot assistance
    SEP -> CS : Initiate chatbot session
    U -> CS : Interact with chatbot
    CS -> SEP : Respond to queries
endif
end
  
```

Figure 9

CHAPTER 4

PROJECT DESCRIPTION

4.1 METHODOLOGIES:

The chatbot system is designed to classify user input into predefined tags or intents and provide relevant responses. It is integrated into a Flask-based web application, where the chatbot leverages a neural network model for processing and responding to user queries. Users interact with the system by sending HTTP requests, which results in instant responses based on the input provided.

a) Data Preprocessing:

Data preprocessing is a crucial step to ensure that the user input is structured appropriately for the neural network model. Initially, user queries are converted to lowercase to maintain uniformity and avoid issues with case sensitivity. Then, the text is tokenized, meaning it is split into individual words. This helps in transforming the text into a bag of words (BoW) representation, where each word is represented as a binary vector, indicating the presence or absence of a specific word in the vocabulary. This preprocessing step helps the model interpret user input as a set of features, which are then fed into the model for classification. By structuring the data in this manner, the chatbot can easily match the input with one of the predefined tags or intents, improving its ability to understand and classify diverse user queries accurately.

b) Neural Network Design and Training:

The neural network powering the chatbot is a feedforward neural network, named **ChatBotNN**, designed to classify user input into specific tags or intents. The architecture of the neural network is simple yet effective. The size of the input layer is determined by the size of the vocabulary, which is essentially the number of unique words used in the training data. The network contains two hidden layers, both employing **ReLU (Rectified Linear Unit)** activation functions, which help the model learn complex patterns in the data

and enable non-linear decision-making. The output layer corresponds to the number of tags or intents the chatbot needs to recognize, producing a probability distribution over these tags.

c) Model Deployment with Flask:

After training, the model is deployed within a **Flask** web application. Flask is a lightweight Python framework ideal for building web services and APIs. The trained model is loaded into the Flask app, which exposes an API endpoint, `/chatbot`. This endpoint accepts **POST** requests, where the user input is sent as a JSON object containing a field labeled "user_input." This allows external applications or users to interact with the chatbot easily via HTTP requests, providing a seamless way to integrate the chatbot into web-based applications, mobile apps, or even other services. The Flask application serves as the interface through which users can communicate with the trained model, providing them with responses based on their input.

d) Flask API Endpoint Logic:

When the Flask API receives a **POST** request, the first step is to retrieve the user input, which is typically in the form of raw text. The same preprocessing steps applied during training are then repeated on the user input. The text is converted to lowercase, tokenized, and transformed into the bag of words representation. This ensures that the input is processed consistently, just like the data the model was trained on.

The processed input is then passed into the trained neural network model, which predicts the most likely tag or intent associated with the user's query. The model outputs a probability distribution across all the possible tags, and the tag with the highest probability is selected. This predicted tag is then matched with its corresponding response, which is predefined in a file containing a list of intents and their associated responses. This ensures that the chatbot remains user-friendly and can handle ambiguous inputs gracefully.

e) Model Saving:

Once the model has been trained and is performing well on the dataset, its internal parameters (weights) are saved for future use. The saved model, along with important metadata such as the input size, hidden layer size, and output size, is stored in a file with a **.pth** extension. This file serves as the model's "snapshot" and contains all the learned information needed to perform inference on new data. The advantage of saving the model is that it allows for easy reuse, as the model can be loaded again without the need for retraining. This is particularly useful in production environments, where the model can be deployed to a live application, allowing the chatbot to classify new user queries and respond appropriately without requiring additional training. Saving the model also enables the chatbot to scale, as it can handle incoming queries from new users across different platforms, all while maintaining its trained capabilities.

In summary, the chatbot is designed to process user queries, classify them into predefined tags, and respond accordingly. The system involves several key steps: preprocessing user input, training a neural network model, deploying the model in a Flask-based web application, and saving the trained model for future use. These components work together to create a highly interactive and intelligent chatbot capable of handling diverse user queries and providing accurate, context-aware responses.

4.1.1 RESULT DISCUSSION:

The **Kammian** platform, as outlined in the proposed system, has demonstrated significant potential in overcoming the challenges traditionally faced by local artisans and pottery makers in Tamil Nadu, particularly those from rural or underserved regions. The platform's **mobile-first approach** ensures that artisans, who may have limited access to computers or technological expertise, can easily interact with the system through their smartphones. This approach is crucial in a region where mobile devices are often the primary means of accessing the internet. The use of **Flutter for front-end development** ensures cross-platform compatibility, enabling smooth operation on both Android and iOS devices.

A key feature of the system is the integration of **AI-powered recommendation algorithms** that combine **collaborative and content-based filtering** techniques. This dual approach allows the platform to suggest products based on both user preferences and similar products purchased by other customers. This has led to an increase in buyer engagement, as customers receive personalized suggestions that align with their tastes and interests. The AI system also improves product visibility, helping unique artisan goods stand out in a competitive marketplace. As a result, artisans have reported increased sales and better market access. This localization feature has also helped artisans reach customers in nearby regions, reducing shipping times and costs.

The **AI-driven chatbot** is another standout feature that has greatly improved communication between buyers and artisans. It helps sellers manage their online stores by answering customer queries, processing orders, and even offering suggestions for related products. This has reduced the burden on artisans, allowing them to focus on their craft while the chatbot handles routine interactions. The chatbot's **real-time responsiveness** has significantly enhanced the customer experience, making the platform more interactive and engaging for buyers. The **inventory management system, order tracking functionality, and seller dashboards** further support artisans by streamlining their operations. Artisans can track inventory, monitor their sales performance, and gain valuable insights into customer behavior, allowing them to make informed decisions about pricing, promotions, and product listings. These features have led to better business management and improved operational efficiency for artisans..

Despite these positive results, the platform faces some challenges that need to be addressed to ensure its long-term success. One of the primary challenges lies in the **availability of sufficient and accurate user data**. The success of the **AI-powered recommendation system** is contingent upon collecting data from a diverse range of users. In rural areas, where digital literacy may be lower and internet usage may be sporadic, this data might not be as readily available, which could limit the effectiveness of personalized recommendations. To mitigate this, the platform could explore alternative methods for

gathering user preferences, such as through simple feedback mechanisms or partnerships with local NGOs and organizations that can assist artisans in collecting data.

The **Kammian** platform offers a model for how digital technology can empower local artisans, enabling them to reach global markets, increase their income, and preserve their cultural heritage. By eliminating intermediaries and facilitating direct communication between artisans and buyers, the platform ensures artisans receive fair compensation for their work. As the system continues to evolve, it could serve as a blueprint for similar initiatives in other regions, driving socio-economic development and fostering global appreciation for traditional crafts. However, continuous improvements in technology, artisan education, and user support will be crucial for the platform's sustainability and scalability.

CONFUSION MATRIX:

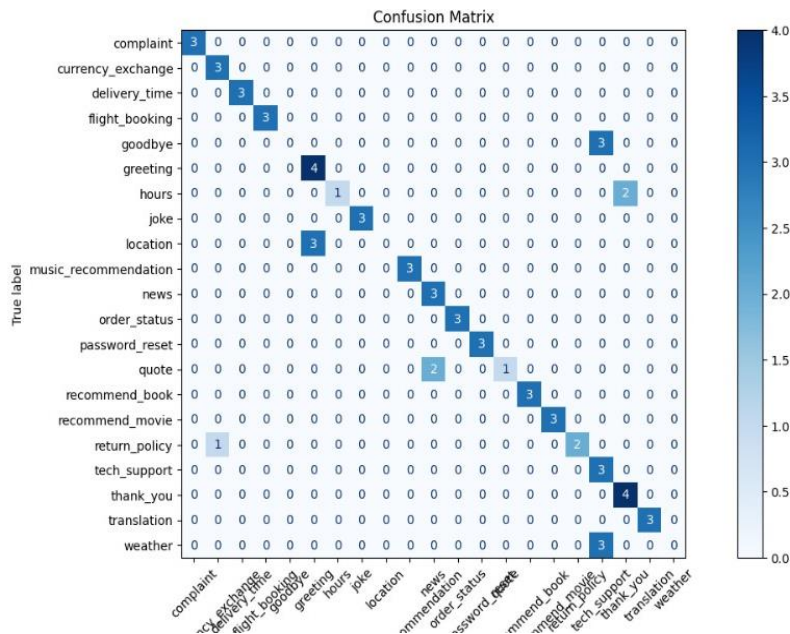


Figure 10

CHAPTER 5

5.1 CONCLUSION AND WORKSPACE

The completion of Phase 1 of the project demonstrates significant progress in developing a user interface and chatbot for artisans and pottery makers for their help. The chatbot successfully integrates.

The proposed e-commerce platform for artisans and pottery makers is thus intended to empower local talent, providing a digital marketplace that bridges the gap between the creators and the consumers. The platform eliminates the layer of intermediaries and makes good use of intuitive technology so that fair value is returned to artisans for their craftsmanship. Features include personalized product recommendations, AI-powered chat support, and tools for marketing the products, all designed to enhance the experience of users on either side of the transaction. The system promotes the preservation of cultural heritage by telling the stories and origination of each product. With this sustainable and inclusive approach, the platform uplifts artisans and encourages appreciation of traditional art forms worldwide.

WORKSPACE

The workspace for the development of the e-commerce platform will have these elements.

Development Environment:

1. Frontend Development

Develop the e-commerce application such that it provides user-friendly and responsive interface with HTML, CSS, JavaScript and frameworks like React or Angular.

2. Backend Development

Utilize frameworks like Django (Python) or Node.js to develop authentications of the users, operational approaches of the databases, and developing APIs.

3. Database Management

Use a relational database like MySQL or PostgreSQL to store user information, product details, and order histories. Alternatively, MongoDB can be employed for a NoSQL approach to ensure scalability.

4. AI Integration

Integrate an AI chatbot to help in providing assistance to sellers with tools like Dialogflow, OpenAI APIs, or Rasa that work on real-time queries and guidance.

Implement recommendation systems using collaborative filtering algorithms in machine learning for a higher buyer experience.

6. Payment Gateway Integration

Incorporate secure payment gateways like Razorpay, PayPal, or Stripe, so all transactions go on without a hitch.

This structured workspace will ensure the efficient development and deployment of the e-commerce platform, fostering a seamless experience for artisans, pottery makers, and their customers.

5.2 FOR PHASE 2

Phase 2: Advanced Features to Make the Platform More Engaging The features of the e-commerce platform developed for artisans and pottery makers are further reinforced with a recommendation system, enhanced UI/UX design, and an improved version of the chatbot in Phase 2. The recommendation system will be done using various machine learning algorithms, such as collaborative filtering and content-based filtering, to analyze user behavior, preferences, and purchasing history.

UI/UX design will be greatly enhanced to offer a more visually rich and intuitive platform. Interactive display of products, smoother navigation flows, and aesthetically friendly themes will be developed in the advanced design elements. These improvements will provide a quite contemporary and captivating shopping experience for the platform's target audience, which happens to include more youthful consumers that value smooth digital experiences. Also, improvements in accessibility, such as improved fonts and layouts, will ensure the platform is accessible to a wider user range, including rural artisans and buyers.

With Phase 2, the platform will bring along advanced features that will implement a smarter, more user-centric experience while further empowering artisans and pottery makers to succeed in the digital marketplace.

5.3 REFERENCES

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APPENDIX

APPENDIX 1

LIST OF PUBLICATIONS

1.PUBLICATION STATUS: WAITING FOR AN ACCEPTANCE

TITLE OF THE PAPER: KAMMIAN : E-COMMERCE WEBSITE FOR
ARTISANS AND POTTERY MAKERS WITHOUT ANY INTERMEDIATORS

AUTHORS: MR. V. KARTHICK, MALLESH U, NARESH KUMAR V

NAME OF THE CONFERENCE: 2025 4th OPJU INTERNATIONAL
TECHNOLOGY CONFERENCE (OTCON) ON SMART COMPUTING FOR
INNOVATION

CONFERENCE DATE: 9 to 11 APRIL

APPENDIX 2:**IMPLEMENTATION CODE :**

```

import json
import numpy as np
import torch
import torch.nn as nn

from torch.utils.data import Dataset, DataLoader
from sklearn.preprocessing import LabelEncoder

# Define the neural network
class ChatBotNN(nn.Module):
    def __init__(self, input_size, hidden_size, output_size):
        super(ChatBotNN, self).__init__()
        self.fc1 = nn.Linear(input_size, hidden_size)
        self.fc2 = nn.Linear(hidden_size, hidden_size)
        self.fc3 = nn.Linear(hidden_size, output_size)
        self.relu = nn.ReLU()

    def forward(self, x):
        x = self.relu(self.fc1(x))
        x = self.relu(self.fc2(x))
        x = self.fc3(x)
        return x

# Preprocessing functions
def preprocess_sentence(sentence):
    return sentence.lower().split()

def bag_of_words(tokenized_sentence, all_words):

```



```

    bag = np.zeros(len(all_words), dtype=np.float32)
    for idx, word in enumerate(all_words):
        if word in tokenized_sentence:
            bag[idx] = 1.0
    return bag

# Load intents file
with open("intents.json", "r") as file:
    intents = json.load(file)

# Extract data
all_words = []
tags = []
xy = []

for intent in intents["intents"]:
    tag = intent["tag"]
    tags.append(tag)
    for pattern in intent["patterns"]:
        words = preprocess_sentence(pattern)
        all_words.extend(words)
        xy.append((words, tag))

# Remove duplicates and sort
all_words = sorted(set(all_words))
tags = sorted(set(tags))

# Prepare training data
X_train = []
Print("Model saved as chatbot_model.pth")

```


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4	Meenu Gupta, Rakesh Kumar, Abhinandan Sharma, Anand S. Pai. "Impact of AI on social marketing and its usage in social media: A review analysis", 2023 14th International Conference on Computing Communication and Networking Technologies (ICCCNT), 2023	1%
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33	K. Revathi, S. Priyanka, S. Kalaivanan, V. Gobalakrishnan, M. Kamalraj, R. Ranjith. "E-Commerce for Artisans in Web Application Using Communication and Growth Technology", 2023 International Conference on Emerging Research in Computational Science (ICERCS), 2023 Publication	<1 %
34	V. Sharmila, S. Kannadhasan, A. Rajiv Kannan, P. Sivakumar, V. Vennila. "Challenges in	<1 %

Information, Communication and Computing Technology", CRC Press, 2024

Publication

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KAMMIAN : E-COMMERCE WEBSITE FOR ARTISANS AND POTTERY MAKERS WITHOUT ANY INTERMEDIATORS

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ABSTRACT

Kammian, a web application aims to empower local artisans in Tamil Nadu, including pottery makers, by addressing the challenges they face in accessing markets and selling their products. Through Kammian, artisans can showcase and sell their products directly to customers, eliminating the need for intermediaries and expensive marketing apps. Leveraging real-time database capabilities, Kammian ensures a seamless, secure, and efficient e-commerce experience, providing customers with access to high quality products at affordable prices with minimal delivery time. Enable the rapidly usable AI in form of the Chatbot in sellers page for fulfill their needs. This paper discusses the development and implementation of Kammian, highlighting its unique features and benefits for artisans and customers alike. By fostering economic empowerment within local communities and streamlining business operations for artisans, Kammian has the potential to make a significant impact on the e-commerce landscape for small-scale businesses

KEYWORDS: E-commerce, Artificial Intelligence(AI), Chat Bot, Web Application, Database

INTRODUCTION

Many local artisans or pottery makers face countless challenges due to the lack of visibility of selling their products. These individuals, hailing from rural areas and small cities, often finding some difficulties to sell their products in larger markets, they need to travel long or many distance from their village to cities and town to meet their clients for sell. Alternatively, they may need to collaborate with companies or expensive marketing apps, These companies and market apps are retrieve the products and sold it for high prices and took the profit from their work. Mobile and e-commerce applications serve as essential tools for accessing the Internet and facilitating the purchase of products and services. As technology advances rapidly, these applications continue to evolve, offering error-free, more secure, scalable, and protective payments. By reducing the need for manual record-keeping and streamlining processes, online e-commerce applications enable local artisans or pottery makers to focus on other activities.

This case study, give the solution for selling their products easily through E commerce website specially for selling their products only not any other products. This paper is helpful for pottery makers and local artisan in rural areas to show case their own products in market. Significance of this paper is, first E commerce website for pottery makers also. Now a days

many people like maintain the environment safely and wants the traditional products to maintain safely. So this website is useful for buy the traditional handmade products easily and directly from the artisan and pottery makers, This makes less the empowerment of artisan and pottery makers and people also knows what are the traditional products in Tamilnadu and how they are making and what area is famous for those products.

LITERATURE REVIEW

1. PAPER TITLE: E-Commerce for Artisans in Web Application Using Communication and Growth Technology

AUTHOR: K. Revathi,S. Priyanka,S. Kalaivanan,V. Gobalakrishnan,M. Kamalraj,R. Ranjith

SUMMARY: Through the provision of a digital platform for the exhibition and global sale of their handcrafted goods, the "E-commerce for Artisans" project seeks to empower craftsmen. By providing resources for online shops, inventory control, order processing, and safe payments, it closes the gap between craftspeople and customers. Consumers can support sustainable workmanship and cultural heritage, interact with producers, and peruse a variety of handcrafted products.

PROs:

The platform helps artisans get above geographic constraints by connecting them to a larger, global client base. The project promotes artisans independence and economic sustainability by facilitating direct sales. Traditional skills and cultural heritage are preserved when distinctive handmade crafts are promoted and displayed. Consumers are able to communicate with the producers, which results in more customized and informed purchases.

CONs:

Due to a lack of technological expertise or internet connectivity, many artists may find it difficult to get and use digital tools efficiently. With so many similar products accessible in a competitive online marketplace, artisans could find it challenging to distinguish apart. Overseeing shipping, handling, and returns for international orders can present financial challenges as well as practical one. Changes in online purchasing trends may cause sales to vary, which could affect the stability of artisans' income.

2. PAPER TITLE: Tribal Welfare Application: A System to Connect Local Artisans & Agencies of MoTA

AUTHORS: S. Uthayashangar,S Sowmiya,K Dheebhika,V Swagatha

SUMMARY:

By providing a digital platform for artisans, the proposed project seeks to create a smartphone application that would improve the social and economic growth of tribal groups. Through this app, artisans can post pictures of their creations for the Ministry of Tribal Affairs (MoTA) to see and encourage. In order to promote contact between agencies, tribes, and the general public, it also has a chat function. In addition to enabling artisans to express questions about training and other topics, the site promotes collaboration for branding, marketing, and skill training.

PROs:

The website increases the reach and economic growth potential of tribal artisans by giving them a digital forum to display their creations.The website enhances the business potential of artisans by facilitating access to branding, marketing, and skill-upgradation training by connecting them with the Ministry of Tribal

Affairs (MoTA).By facilitating fruitful communication between organizations, artisans, and the general public, the chat component promotes cooperation and community support

CONs:

Giving artists a way to market and sell their creations gives them the confidence to take control of their art and income.Better support and more fruitful participation result from the chat feature's encouragement of direct communication between agencies, tribes, and regular citizens.

3.PAPER TITLE: The Effect of Using Chatbots at e-Commerce Services of Customer Satisfaction, Trust, and Loyalty

AUTHORS: Surjandy,Cadelina Cassandra

SUMMARY:

This study examines the impact of chatbot service quality on customer trust, loyalty, and satisfaction in e-commerce during the post-pandemic new normal. Using data from 205 respondents and employing structural equation modeling and partial least squares (SEMPLS) techniques, the research identifies seven influential factors, including response time's effect on trust, usability's effect on satisfaction, and reliability's impact on trust, loyalty, and satisfaction. However, it also highlights seven factors that showed no significant influence. The findings underscore both the advantages and limitations of chatbot usage in enhancing the customer experience in e-commerce.

PROs:

According to the survey, the quality of chatbot services can improve customer happiness, loyalty, and trust while also improving the overall customer experience.Businesses should concentrate on these areas to maximize chatbot performance by identifying seven important

factors (such as reaction time, usability, and dependability).

CONs:

The study's results, which came from 205 respondents, might not accurately reflect the wide range of e-commerce environments or apply to all clientele groups. If fundamental chatbot restrictions are not adequately addressed, system quality issues—a previously noted issue—may continue to exist.

4. TITLE: The Utilization of AI Extends Beyond Payment Systems to E-Commerce Store Development

AUTHORS: Sushant Mimani,Rakesh Ramakrishnan,Piyush Rohella

SUMMARY: Artificial Intelligence (AI) has thus been considered for the efficient functioning of e-commerce. The AI is such that it gives better experiences to the client and provides search functionalities, product recommendations, proper inventory management, and payment systems. Intelligent bots powered by AI interact with the customer to answer a few questions and lead the customers to a product that he or she may like. Automated search and recommendation work on the basis of what the customers have purchased in the past. The payment systems introduced can benefit by making the process easier, reducing security risk, and providing a general better user experience. These factors make e-commerce stores survive and maximize sales in the mature market.

PROs:

The nature of customer engagement is enhanced through AI-powered chatbots and customized recommendations, thus resulting in greater satisfaction and involvement.

AI will help streamline processes within an organization- from inventory management and automated customer queries, product recommendations, and streamlining of payment systems - all aimed at improving operational efficiency. This would reduce security risks and instances of fraud through intelligent monitoring and validation of transactions.

CONs:

Setting up AI-driven systems could be quite expensive, not just small businesses or startups but also in the long run for large corporations. AI systems mean constant maintenance and updates, especially to keep the system accuracy at a certain level if one is dealing with resource-hungry systems. Efficiency of AI, therefore depends on larger volumes of data, shoddy data quality or privacy concerns can easily curtail the effectiveness of AI systems.

5.TITLE: Development of an E-Commerce Chatbot for a University Shopping Mall

AUTHORS: Victoria Oguntosin, Ayobami Olomo

SUMMARY:

The Hebron chatbot is developed as a web application for the Covenant University Community Mall (CUSM) in an attempt to provide intelligent and friendly shop participation in shopping. It has been built in Python, React.js, and MySQL to streamline interactions with users and draw out datasets on e-commerce. The chatbot will enable personalized recommendations, 24/7 customer assistance, and better product query management for an efficient shopping journey and a more engaging experience.

PROs:

The chatbot offers personalized suggestions along with round-the-clock support; thus,

shopping becomes more interesting and less cumbersome for the customers. Consumers can easily locate products without having to wait on human support and find answers regarding various queries. It reduces their work on the part of administrators as it allows there to be smooth upgrades and efficient management of data through the Admin Portal.

CONs:

Such a chatbot and its integration with building e-commerce possibilities is extremely time- and money-intensive. Maintaining and debugging may start getting messy as the interaction among the components, the Python, React.js, and MySQL, becomes too complex. A customized chatbot for the Covenant University Community Mall may limit its broader applicability or adaptability without customization across different contexts.

6.TITLE: Enabling Autonomous Digital Marketing: A Machine Learning Approach for Consumer Demand Forecasting

AUTHORS: Kanika Singhal, J.N. Singh, Vishnu Sharma

SUMMARY:

This paper explores the interconnection of artificial intelligence and ML in creating a self-governing and autonomous framework that revolutionizes traditional marketing methods with regard to predicting and addressing the needs of their customers. This advanced form of data-driven decision making would be facilitated by ensemble machine learning, including but not limited to decision tree algorithms. The work uses a dataset of 6,561 tuples on the refining of cost-effective strategies maximizing profits and finding patterns in pricing data.

PROs:

It integrates AI and ML with the ability to predict demand accurately to improve decision-making abilities, and this is going to change the game in traditional marketing strategies. Ensemble machine learning and decision tree algorithms are used in precise cost-effective refinements that benefit from maximizing profits.

CONs:

Developing and maintaining an all-round AI/ML-driven framework requires significant leading-edge technical expertise, as its effectiveness is highly dependent upon the quality and quantity of the available data determining efficiency when it is either insufficient or provided as inaccurate data.

7.TITLE: Impact of AI on Social Marketing and its Usage in Social Media: A Review Analysis

AUTHORS: Meenu Gupta,Rakesh Kumar,Abhinandan Sharma,Anand S. Pai

SUMMARY:

This article reviews the applications and integration of AI in the social sphere and how it influences social media marketing. AI enables companies to analyze large data sets for targeted advertising and better engagement through understanding consumer perceptions, thereby enhancing efficiencies in business, cutting cost, and increasing profits through reduced risk. Additionally, AI protects user data and privacy. However, over-reliance on AI in social media interactions might harm social interactions.

PROs:

AI will help automate operations and logistical networks, hence saving costs on various sectors. It enables firms to generate more targeted advertisements with high competence in the case

of consumer behavior and preference. AI provides the most robust data security and privacy protection solutions.

CONs:

Excessive dependence on AI for social networking interactions could make creativity limited and the communication un personalized. As useful as that would be in safekeeping data, applying AI raises once more questions about privacy because data must be gathered and scanned.

8.TITLE: Native Nest: An E-Commerce Platform for Promoting Tribal Products and Culture

AUTHORS: S. Rajendrakumar,Yashasvi Chowta,G Harshavardhan Tadikonda

SUMMARY:

The proposed study Native Nest is an online platform that supports the commerce of the Ooty District, connecting tribal artisans with customers. It provides easy access to information of QR code and the product to cut in between while making an online purchase. Such type of initiatives promote cultural heritage, empower the tribal communities, and bring socio-economic development through broader market access and cultural exchange.

PROs:

Provides a multi-platform for tribal artisans to display their cultural heritage and access the wider market. Increasing profit margin among sellers since a direct connection with the buyers is established. It grants a smooth user experience, making the online platform accessible and engaging.

CONs:

High cost and logistical investment are required to develop and maintain a strong online

platform. Tribal artisans may not appropriately adopt and use digital technologies as they may not be fully trained. Established online marketplaces might create problems for penetration.

9. **TITLE:** Personalized Search Engine Optimization for E-Commerce Platforms Based on Content Filtering Algorithm

AUTHOR: Haiefn wang

SUMMARY:

The system details the design and the construction of a personalized online shopping information filtering system that is provided with the kinds of e-commerce platforms. It offers improved user experiences by giving accurate recommendations based on user inputs. Results of performance tests show varying matching effectiveness for different types of content: text, images, videos, news. It can cater to diverse user needs, thus improving relevance and service quality.

PROs:

Tailoring Personal Recommendations to the Needs of Users on an E-commerce Site Increases Satisfaction and Engagement. SEO: Rank Algorithm Improves the Visibility of Contents and Helps Retrieve Needed Information Correctly. Keyword Matching Brings Right Recommendations Increasing Possibility of Positive Interactions.

CONs:

The quality of recommendations would therefore be a function of the quality of the available data and the quality of the keywords. Developing and maintaining such a system would require a highly resource-intensive technical capability and related expertise. One other issue associated with capturing and analyzing user input is privacy and data security.

10.**TITLE:** Automated Categorization of Turkish E-commerce Product Reviews Using BERTurk

AUTHORS: Volkan Altintas,Murat Kilinc

SUMMARY:

This research automatically categorized user comments published at e-commerce sites into predefined categories using the power of machine learning algorithms and the strength of transformer-based models such as BERT. The dataset of Turkish comments related to phones, computers, and headphones gathered from Amazon.com.tr were used for this categorization. The Naive Bayes, Linear Support Vector Classifier, Random Forest, and pre-trained and fine-tuned BERT model were used in the classification process, including the BERTurk. F1-score results from the classification clearly show that BERTurk-based model is the most accurate over any other model.

PROs:

The advanced models applied, like BERTurk, ensure maximum possible accuracy in the classification of user comments. Automatic commenting categorization will help the users quickly and easily find relevant reviews to assist them in making informed choices. Focusing on Turkish comments for their usefulness to other languages is an indication of flexibility and feasibility.

CONs:

Product lines, user preferences, or language usage may change, so updates and retraining may be required from time to time. Of course, gathering and processing user comments raise

S.NO	TITLE	AUTHORS	AIM	YEAR OF PUBLISHING
1.	E-Commerce for Artisans in Web Application Using Communication and Growth Technology	K. Revathi,S. Priyanka,S. Kalaivanan,V. Gobalakrishnan,M. Kamalraj,R. Ranjith	Artisans plays crucial in preserving culture, However they facing challenges to sell their products So our project offer E commerce website for sell their products.	2023
2.	Tribal Welfare Application: A System to Connect Local Artisans & Agencies of MoTA	S. Uthayashangar,S Sowmiya,K Dheebhika,V Swagatha	The project's goal is to create a smartphone application that gives tribal craftspeople a digital platform to market and display their creations by uploading pictures, opening up more business options throughout India.	2019
3.	The Effect of Using Chatbots at e-Commerce Services of Customer Satisfaction, Trust, and Loyalty(Wagner 2021)	Surjandy,Cadelina Cassandra	Chatbot have been using in E commerce website for long years. This study focus on quality factor of chatbot on customer trust, loyalty, statisy factor.	2023
4.	The Utilization of AI Extends Beyond Payment Systems to E-Commerce Store Development	Sushant Mimani,Rakesh Ramakrishnan,Piyush Rohella,Nasmin Jiwani,J. Logeshwaran	Through Algorithm and Machine learning, This study aims to power E commerce website through AI by improving search, recommendation system and payment system.	2024
5.	Development of an E-Commerce Chatbot for a University Shopping Mall	Victoria Oguntosin, Ayobami Olomo	This research aims to develop a web based chatbot developed by React.js and python these gives smart, easy shopping	2022
6.	Enabling Autonomous Digital Marketing: A Machine Learning Approach for Consumer Demand Forecasting	Kanika Singhal,J.N. Singh,Vishnu Sharma	This study research the integrate the AI and ML to address consumers demands , for precise demand prediction and optimize digital market	2024

7.	Impact of AI on Social Marketing and its Usage in Social Media: A Review Analysis	Meenu Gupta,Rakesh Kumar,Abhinandan Sharma,Anand S. Pai	This paper aims to review the application and integrate the AI to improve operational efficiency, boost profit and consumer behavior	2023
8.	Native Nest: An E-Commerce Platform for Promoting Tribal Products and Culture	S. Rajendrakumar,Yash asvi Chowta,G Harshavardhan Tadikonda,Sathi Lakshmi Priyatha Reddy,Mukkanti Venkata Sai Karthik,Selvanayaki Kolandapalayam Shanmugam,Senthil Kumar Thangavel	This study propose a online platform for Tribal in Ooty district for sell their heritage products to connect with buyers.	2024
9.	Personalized Search Engine Optimization for E-Commerce Platforms Based on Content Filtering Algorithm	Haifeng Wang	This article aims to build a personalized information filtering based on content and structure through a actual cases and search engine optimization, keyword matching	2024
10.	Automated Categorization of Turkish E-commerce Product Reviews Using BERTurk	Volkan Altintas,Murat Kilinc	Consumer when buying a product they make the final decision based on product content on comment based on product.	2024
11.	Transforming E-Commerce: AI Chatbots for Supercharged Customer Experiences	Ryan,Wesley Brilliant Lay,Jerry Jonathan Chia,Anderes Gui	AI chatbot can understand respond to request in real time, deliver personalized, effective service, a combined approach of UTAUT and TAM.	2024
12.	Recommendation system development for fashion design system	Hyunwoo Hwangbo, Yang Sok Kim, Kyung Jin Cha	This paper present a filtering recommendation system that implement in korean fashion selling company	2020

13.	Enhancing Customer Experience through AI-Enabled Content Personalization in E-Commerce Marketing	<i>Tarun Kumar Vashishth, Vikas, Kewal Krishan Sharma, Bhupendra Kumar, Sachin Chaudhary, Rajneesh Panwar</i>	By investigating how AI-enabled personalization impacts customer happiness, engagement, and conversion rates, this study seeks to understand how AI-driven content personalization might improve the customer experience in e-commerce marketing.	2024
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BASE PAPER: PROPOSED METHODOLOGY

The frontend of the Lokart mobile application was developed using the Flutter SDK, and the backend through Google Firebase to guarantee complete cross-platform compatibility along with easy performance and real-time data synchronization. The application integrates a user authentication system with multiple channels, including email, mobile numbers, and Google accounts, by having it verified via Firebase. Buyers can browse and purchase products; sellers can upload and manage their listings after authentication. The app uses the location services, whether GPS or manual inputting. This will provide users with localized products for purchase. The collaborative and content-based recommendation algorithms analyze user preferences to suggest relevant items, thus increasing user engagement and product visibility. Sellers can interact directly with the buyer through contact information shared after placing an order, hence ensuring smooth communication and transaction processes.

For added functionality, Lokart was developed to go through rigorous validation including unit testing, integration testing, user acceptance testing with artisans locally, and performance testing under a variety of network conditions. The app was consequently designed to add some

features such as mobile-based registrations to complement the issues of accessibility by users.

The platform also boasts other features such as an order tracking system in a streamlined

manner, dashboards tailored for sellers, and AI-driven recommendations for the buyers. This holistic development and testing approach ensures that Lokart enables artisans to directly reach their customers, cutting out intermediaries and using digital tools to scale the businesses. This economic growth, while streamlining artisan workflows, creates an impressive e-commerce product dedicated specifically to small-scale jewellers and artisans in communities.

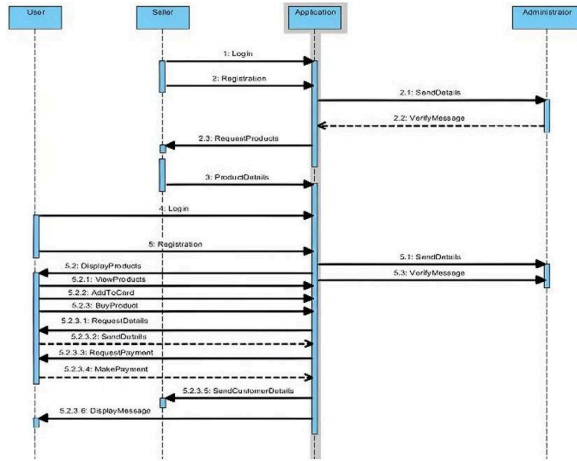


Fig 1. How user interact with user in base paper

METHODOLOGY:

The objective is to get the chatterbot to classify the input from the user into predefined tags or intents and return a proper reply. The chatbot model was then spun into a Flask-based web application, which was trained by a neural network. Users can interact with the chatbot via HTTP requests to make an instant response from the input.

a) DATA PREPROCESSING:

Data pre-processed refers to cleaning or processing of user input data and splitting it into tokens ready to feed into the model for inference. User queries are first converted to lower cases and then words are split. This results in transforming words into bag of words wherein the vocabulary is mapped with a binary vector indicating the presence of a word within the vocabulary. User inputs thus undergo cleaning and structuring processes for the model process as classification into one of tags predefined.

b) NEURAL NETWORK DESIGN AND TRAINING:

The core model of the chatbot is a feedforward neural network, ChatBotNN, for classification of input into one of a few tags. The size of the vocabulary governs the size of the input layer. The model has two hidden layers with ReLU activation and one output layer designed to correspond to the numbers of tags. A dataset

used for training contains different patterns of tags. Cross-Entropy Loss is used for the loss function and Adam for reducing during training. After training, the model saves the weights of the model to a file: chatbot_model.pth.

C) MODEL DEPLOYMENT WITH FLASK:

The model is loaded into a Flask web application once it's fully trained and saved. The Flask app provides one API endpoint, /chatbot, taking the user input in the form of a POST request with a JSON object containing the field "user_input". Thus, external applications, or users themselves, could directly interface with the chatbot over HTTP.D)

D)FLASK API ENDPOINT LOGIC:

When the API receives a POST request, it retrieves the user input in tokenized form and generates the BoW representation by reapplying the same preprocessing steps that are performed on the training data.

The loaded model, with the trained weights, processes its input to predict the tag, or intent associated with the input.

The predicted tag then is matched with a defined tag inside the file of intents and an appropriate response is returned from the list of responses of the related intent.

But if it does not find a match or its input is unclear, then there is an automatic fallback response-asking the user to rephrase his question.

E) MODEL SAVING:

Once the model is trained, its state, that is the learned weights, along with input size, hidden size and output size parameters, are saved into a file with .pth extension. A saved model can be used for inference. With this, the model can classify the inputs created by the new users without requiring training again. Saving the model allows it to be reused in deploying into an application, thereby creating the basics of a chatbot.

ARCHITECTURE DIAGRAM

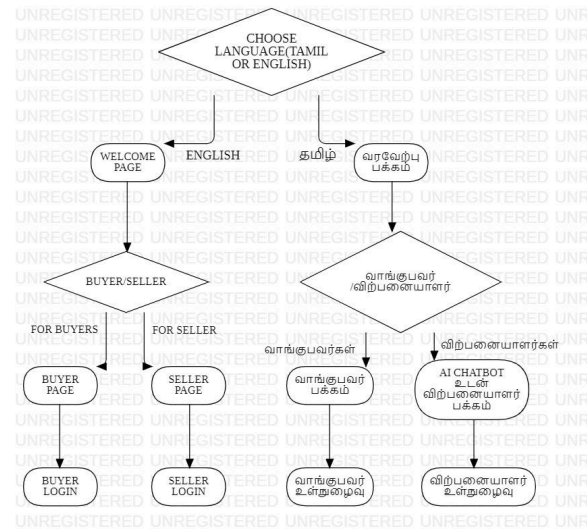


Fig 2. Basic diagrammatic representation of this project

DISCUSSION

The above code is a part of a chatbot which is capable of interpreting the user's input as per the user's intention and acting accordingly. It has the following components:

The design of neural networks

Structure: The architecture consists of three layers and has the shape of multi-layer perceptrons (MLPs) that have:

Input layer: This layer is expected to be of the same size as the size of vocabularies (number of unique words in the dataset).

Hidden Layer(s): The second part includes two additional hidden layers that are also made of a fixed size of 8 neurons each.

Output Layer: This layer is said to be about the same size as the number of unique intent tags.

Activation Function: A ReLU is used as activation function to allow a non-linear transformation of the inputs.

Loss function: Here CrossEntropyLoss function is utilized that is suitable for multi-class problems.

Data Cleaning and Preparation

Text Tokenization: The first step in this case is whereby the user inputs written in the upper case are first changed to lower case followed by word separation. Bag of Words Representation: Due to the fact that the output and target are different per sentence, the presence of every word may be represented with a boolean indicating either a 0 or a 1.

Label Encoding: This, which is also referred to as the intent tag, will be encoded into numbers.

Training

In view of the first step, the dataset from which the model is trained comes from a combination of the intents JSON file.

Batch Processing: In each training set 8 samples of data can be trained for various applications training other models .

Optimization: Ada's Optimizer in this case works effectively when the learning rate parameter is set to 0.001.

Training goes up to 100 runs although it is observed that a loss is posted every tenth running epoch for the purposes of evaluation.

Deployment with Flask

In the particular both the models are saved into the file named as a chatbot_model . pt in different directories and embedded with a flask platform .

User text is collected and sent to the appropriate model where the intended tag is determined and the model is used to reply with the message.

CORS Enabled. To facilitate the connectivity between the front-end applications and the back-end there is a feature that can come in handy.

Strengths

Lightweight: This can be classified as a user friendly and effective chatbot which can also be implemented in a small scale bot.

Customizable: Other customizations include the modification of the Intents and responses because they are all embedded in on Single

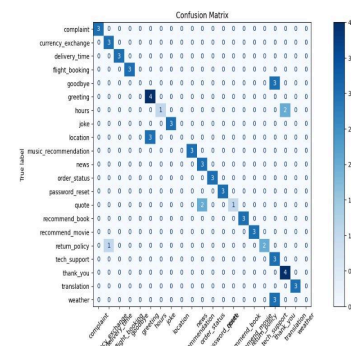
interest.json files so they are changed simply by editing the file.

Real-time Responses: According to the deployment structure, the users can expect prompt replies by making a query through the application.

Limitations

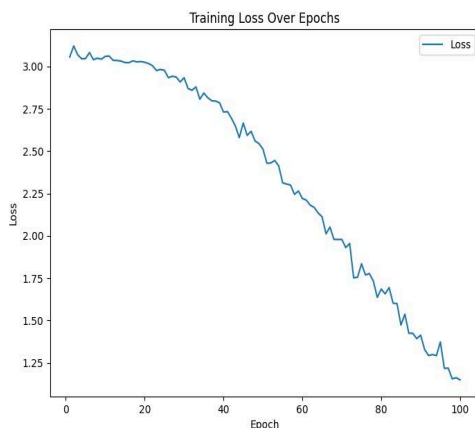
1. **Data Dependency:** The chatbot can only use the intentions listed in the intents.json fle. It cannot reply to questions outside of this range.
2. **Words in a Bag Representation:** Context and word order are disregarded. Complex word patterns and synonyms may be hard for them to comprehend.
3. **Fixed Responses:** Because each intent has a preset list of potential responses, there is less flexibility.
4. **Model Size:** The little hidden layer size of 8 neurons may not adequately represent more complex datasets.

RESULT



Ashley is working on an 'E-commerce for Artisans' project with the vision of empowering artisans and craftsmen by building a digital platform that allows them to show off their handmade products globally. The initiative, thereby, would bridge a gap between brilliant artisans and end-buyers across the globe, thus

enhancing economic growth as well as carrying forward cultural heritage. The site is therefore created with the intent of providing an easily accessible interface for artisans to show their products while giving buyers a chance to discover and purchase high-quality unique pieces. Additionally, Ashley foresees adding an AI-powered chatbot on the seller page, hoping to enhance further user engagement and make communication smoother. This will give artisans the ability to respond to queries, interact, and create listings, sales, and management of customers, changing the platform into a holistic and user-friendly tool for artisan empowerment.



FUTURE SCOPE

Global Market Expansion:

Provide multilingual support and localized marketing campaigns to connect artisans with international buyers, promoting cross-cultural exchanges and greater access to markets.

Blockchain Integration:

Utilizing blockchains for secure payment processing, transparent tracking of an order, or ascertaining the products authenticity is increased.

Government & NGOs Collaboration:

Engage with the appropriate organizations for promoting traditional crafts, sourcing grants & funding opportunities, and preserving cultural heritage.

Augmented Reality (AR) Integration:

Provides AR functionalities that enable customers to preview and engage with products virtually before the purchase decision-making process to foster confidence and participation.

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CO-PO Mapping

PROJECT WORK COURSE OUTCOME (COs):

CO1: On completion it will prove as a major breakthrough in digital transformation of college management leveraging end-to-end technologies.

CO2: It will ease out the management overhaul and boost better transparency and robustness to the entire setup.

CO3: Given the huge amount of data available in the educational sector, especially in the colleges, technologies like Machine Learning and AI can be used to increment student performance and job-market ready.

CO4: It helps in keeping the entire system snappy and ensures all endpoints are taken care of, reducing the overall waiting periods in the traditional working.

CO5: Students will be able to publish or release the project to society.

PROGRAM OUTCOMES (POs)

PO1: Engineering Knowledge: Apply the knowledge of engineering fundamentals, mathematics, science and technology and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Ability to apply deep learning methodologies to solve computational tasks, model real world problems using appropriate datasets and suitable deep learning models. To understand standard practices and strategies in software project development using open-ended programming environments to deliver a quality product.

PO3: Design/development of solutions: Design solution for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety.

PO4: Conduct investigations of complex problems: Use research - based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The Engineer and society: Apply reasoning informed by the contextual knowledge to assess social, health and safety issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental context, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practices.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs):

PSO1: Foundation Skills: Ability to understand, analyze and develop computer programs in the areas related to algorithms, system software, web design, deep learning and cloud computing for efficient design of computer-based systems of varying complexity. Familiarity and practical competence with a broad range of programming languages and open-source platforms.

PSO2: Problem-solving Skills: Ability to apply mathematical methodologies to solve computational tasks, model real world problems using appropriate data structure and suitable algorithms. To understand standard practices and strategies in software project development using open-ended programming environments to deliver a quality product.

PSO3: Successful Progression: Ability to apply knowledge in various domains to identify research gaps and to provide solutions to new ideas, inculcate passion towards higher studies, creating innovative career paths to be an entrepreneur and evolving as an ethically responsible computer science professional.