Customer Support Chat-Bot With ML

A PROJECT REPORT

Submitted by,

Kiran R	20211CSE0382
Arun Kumar P	20211CSE0378
Jishnu Kumar G S	20211CSE0386
Praveen Kumar S	20221LCS0022

Under the guidance of,

Mr. Md Ziaur Rahman
Assistant Professor
School of Computer Science and Engineering,
Presidency University, Bengaluru

in partial fulfillment for the award of the degree of

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING

At

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

PRESIDENCY UNIVERSITY

BENGALURU

JANUARY-2025

PRESIDENCY UNIVERSITY

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

CERTIFICATE

This is to certify that the Project report **"Customer Support Chat-Bot With ML"** being submitted by "Kiran R, Arun Kumar P, Jishnu Kumar G S, Praveen Kumar S" bearing roll numbers "20211CSE0382, 20211CSE0378, 20211CSE0386, 20221LCS0022" in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering is a Bonafide work carried out under my supervision.

10/01/25

MR. MD ZIAUR RAHMAN
Assistant Professor
School of CSE
Presidency University

10/1/25

DR. ASIF MOHAMMED
Associate Professor & HOD
School of CSE
Presidency University

DR. L. SHAKKEERA
Associate Dean
School of CSE
Presidency University

DR. MYDHILI NAIR
Associate Dean
School of CSE
Presidency University

DR. SAMEERUDDIN KHAN
Pro-VC School of Engineering
Dean -School of CSE&IS
Presidency University

PRESIDENCY UNIVERSITY

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

DECLARATION

We hereby declare that the work, which is being presented in the project report entitled **Customer Support Chat-Bot with ML** in partial fulfillment for the award of Degree of **Bachelor of Technology** in **Computer Science and Engineering**, is a record of our own investigations carried under the guidance of **Mr. Md Ziaur Rahman, Assistant Professor, School of Computer Science and Engineering, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

Name	Roll No	Signature
Kiran R	20211CSE0382	Kiran.R
Arun Kumar P	20211CSE0378	
Jishnu Kumar G S	20211CSE0386	
Praveen Kumar S	20221LCS0022	Praveen Kumar S

ABSTRACT

In the modern business landscape, customer support plays a critical role in shaping customer experiences and building brand loyalty. With the growing demand for instant responses and 24/7 availability, organizations are increasingly exploring artificial intelligence (AI) solutions to enhance the efficiency and effectiveness of their customer service operations. This project aims to design and develop an intelligent customer support chatbot that leverages machine learning (ML) and natural language processing (NLP) techniques to deliver automated, yet personalized, customer assistance.

The core objective of this project is to build a machine learning-based chatbot capable of understanding and responding to a wide array of customer queries in real-time. Traditional customer service models often require significant human resources, leading to high operational costs and long response times. By integrating an AI-powered chatbot into the customer support process, businesses can streamline operations, reduce response time, and provide customers with timely, accurate information. This would not only improve operational efficiency but also enhance overall customer satisfaction by offering quicker resolutions to customer issues.

To develop the chatbot, the project focuses on several key components, including data collection, natural language understanding, and response generation. A critical aspect of the chatbot's design is its ability to comprehend user input and determine the intent behind each query. The system uses supervised learning models to classify user queries into predefined categories, such as billing inquiries, product information, technical support, and general inquiries. By training the chatbot on a large dataset of customer interactions, the model learns to recognize patterns in the text and improve its accuracy over time. Techniques like tokenization, stemming, and lemmatization are employed to process and normalize text input, while advanced models such as neural networks and transformers (e.g., BERT or GPT) are used for understanding context and generating appropriate responses.

The chatbot's architecture also incorporates a feedback loop that allows it to adapt and learn from past interactions. As customers interact with the bot, feedback data is collected, helping the system refine its predictions and responses. This continuous learning mechanism enables the chatbot to evolve, becoming increasingly accurate and sophisticated in handling more complex queries. Additionally, the system is designed to escalate conversations to human agents when necessary, ensuring that customers always receive the best possible support in situations beyond the bot's capability.

ACKNOWLEDGEMENTS

First of all, we indebted to the **GOD ALMIGHTY** for giving me an opportunity to excel in our efforts to complete this project on time.

We express our sincere thanks to our respected dean **Dr. Md. Sameeruddin Khan**, Pro-VC, School of Engineering and Dean, School of Computer Science Engineering, Presidency University for getting us permission to undergo the project.

We express our heartfelt gratitude to our beloved Associate Deans **Dr. Shakkeera L and Dr. Mydhili Nair,** School of Computer Science Engineering, Presidency University, and **"Dr. Asif Mohammed"** Head of the Department, School of Computer Science Engineering, Presidency University, for rendering timely help in completing this project successfully.

We are greatly indebted to our guide **Mr. Md Ziaur Rahman, Assistant Professor** and Reviewer **Dr Ramesh Sengodan, Professor**, School of Computer Science Engineering, Presidency University for there inspirational guidance, and valuable suggestions and for providing us a chance to express our technical capabilities in every respect for the completion of the project work.

We would like to convey our gratitude and heartfelt thanks to the PIP2001 Capstone Project Coordinators **Dr. Sampath A K, Dr. Abdul Khadar A and Mr. Md Ziaur Rahman** and Git hub coordinator **Mr. Muthuraju V.**

We thank our family and friends for the strong support and inspiration they have provided us in bringing out this project.

Kiran R

Arun Kumar P

Jishnu Kumar GS

Praveen Kumar S