AI-Powered College Chatbot

By :

K.Akshith 23R11A05B6

K.Srikar   23R11A05B7

G.Sleeva   23R11A05A4

Introduction

The AI-Powered College Chatbot is designed to assist students and parents by providing instant, accurate responses to common college-related inquiries. It leverages advanced NLP and machine learning techniques to enhance communication and information accessibility.

Enhancing Student Satisfaction with Chatbots

Instant Access to Information

Educational institutions require instant access to information to enhance student satisfaction.

Navigating Complex Websites

Navigating complex college websites can be a challenge for students and parents alike.

Chatbot as a Solution

The chatbot serves as a solution, offering quick and accurate responses to frequently asked questions.

Automating College Life FAQ Responses

Goal of Automation

The primary goal is to automate responses to frequently asked questions related to college life.

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Improving Accessibility

By improving accessibility, the chatbot ensures that vital campus information is readily available.

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NLP and Machine Learning

It showcases the practical applications of natural language processing (NLP) and machine learning in the educational sector.

Key Features of the Chatbot

User-Friendly Interface

The chatbot features a real-time chat interface that is user-friendly and engaging.

NLP-Based Intent Detection

It utilizes NLP-based intent detection to accurately understand user queries through machine learning.

Broad Topic Coverage

The system is capable of responding to over 50 college-related topics, enhancing its utility.

Dynamic User Experience

The frontend is responsive, featuring auto-scroll and typing effects for a dynamic user experience.

Tech Stack Overview

Frontend Development

Utilizes HTML, CSS, and JavaScript for a smooth user interface.
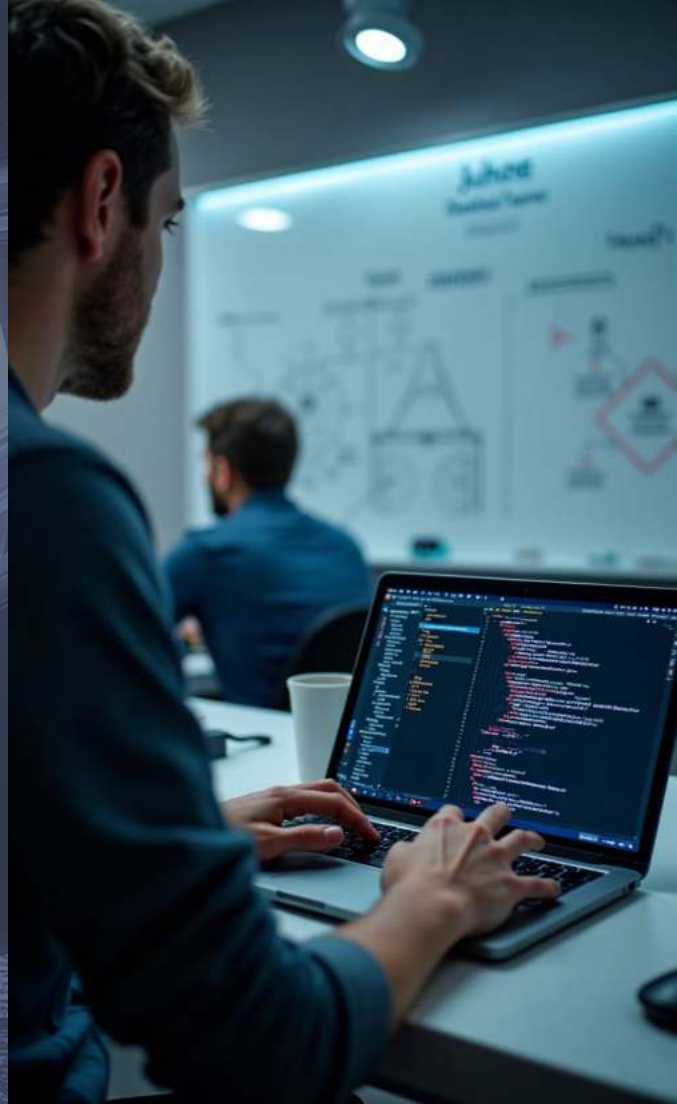
Backend Framework

Runs on Python Flask for robust server-side operations.

NLP Functionality

Employs TfidfVectorizer and Logistic Regression from scikit-learn.

Data Organization

Managed using a custom intents.json file for key responses.

System Architecture Overview

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User Interaction

Users initiate interactions by typing messages in the web interface.

Query Processing

Flask processes these queries, invoking the chatbot logic for response generation.

Intent Prediction

The ML model predicts the intent of the user query, matching it with the appropriate response.

Response Display

The final response is sent back to the frontend for display, creating a seamless user experience.

Dataset & Training Overview

The dataset and training process involve several key components, including data preprocessing and model training. The dataset is structured in a way to facilitate effective learning and response generation.

Dataset Structure

Consists of intents.json with user patterns and bot responses.

Preprocessing Steps

Involves tokenization and vectorization using TF-IDF.

Model Training

Uses a Logistic Regression Classifier saved with Pickle.

Applications of Chatbots in Education

Student Helpdesk Automation

Improves efficiency and response times.

Website Integration

Enhances user experience on college websites.

Admissions Assistance

Guides prospective students through the application process.

Event Inquiry Chatbot

Provides real-time information about campus events.

Future Enhancements

Context-aware Conversations

Future developments may include context-aware conversation capabilities for more personalized interactions.

Multi-language Support

Multi-language support could broaden accessibility for international students.

Admin Panel for Updates

An admin panel for updating intents dynamically would ensure the chatbot remains current and relevant.

Voice Interaction

Implementing voice interaction via speech recognition would facilitate hands-free communication.

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