Gujarat Vidyapith Chatbot

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Agenda

- Introduction
- Key Features of Chatbot
- Technology Stack
- Project Architecture
- Database Schema
- Ui Design
- Limitations of the System
- Proposed Enhancements

Introduction

- **Why Chatbot?**

This project aims to create an efficient and user-friendly chatbot system for Gujarat Vidyapith.

The system helps students, staff and visitors get quick answers to common queries related to the university.

It reduces manual workload and improves information accessibility.

The chatbot uses predefined intents, processes user questions and returns accurate responses.

The goal is to provide a simple, fast and reliable digital helpdesk.

- **What Problem Does It Solve?**

Slow information delivery

Repeated manual queries to staff

Difficulty finding accurate and updated details

Confusion during admissions and department-level inquiries

Lack of a single point of information for the university

Key Features of Gujarat Vidyapith Chatbot

- Provides instant answers to university-related queries
- Covers departments, courses, admissions and general campus information
- Works on intent-based training to maintain accuracy
- Simple and clean chat interface for students and visitors
- Centralized admin panel to add, update or remove intents
- Responds 24/7 without depending on staff availability
- Reduces repetitive workload for faculty and office staff
- Supports structured responses for important topics like fees, programs and eligibility
- Can be expanded with automatic model training in future
- Lightweight design that works on the web without heavy setup

User Module – Features

- **User Registration**

New users can create an account using basic details like name, email and password.

- **Secure Login**

Only registered users can log in with valid credentials to access the chatbot.

- **Profile Handling**

Users can view and update their profile details (name, contact info, etc.) to keep data accurate.

- **Chat with Chatbot**

Logged-in users can ask queries related to Gujarat Vidyapith and get instant responses.

- **Chat History**

Each user's previous conversations are stored so they can review past answers anytime.

Admin Module – Features

- **Admin Dashboard**
  Central panel showing overview of total users, active users, total chats and recent activity.
- **User Status Monitoring**
  Admin can see which users are active, inactive or newly registered.
- **View User Chat History**
  Admin can access user chat logs to:
  - Analyze common queries
  - Improve intents and responses
  - Monitor misuse or inappropriate queries
- **System Control**
  Admin can manage intents, update responses and maintain the overall quality of the chatbot.

Technology Stack

- **Frontend**

HTML

CSS

JavaScript

Bootstrap (for responsive UI)

- **Backend**

Python

Django Framework

Chatbot core logic using NLTK / trained intent model

- **Database**

SQLite (or the one you used)

Stores users, chat history, intents and admin data

- **Machine Learning / NLP**

NLTK for text preprocessing

Bag-of-Words model

Custom trained model using json dataset

- **Tools & Libraries**

Django Admin Panel

NumPy

Pickle for model storage

JSON for intents dataset

GitHub for version control

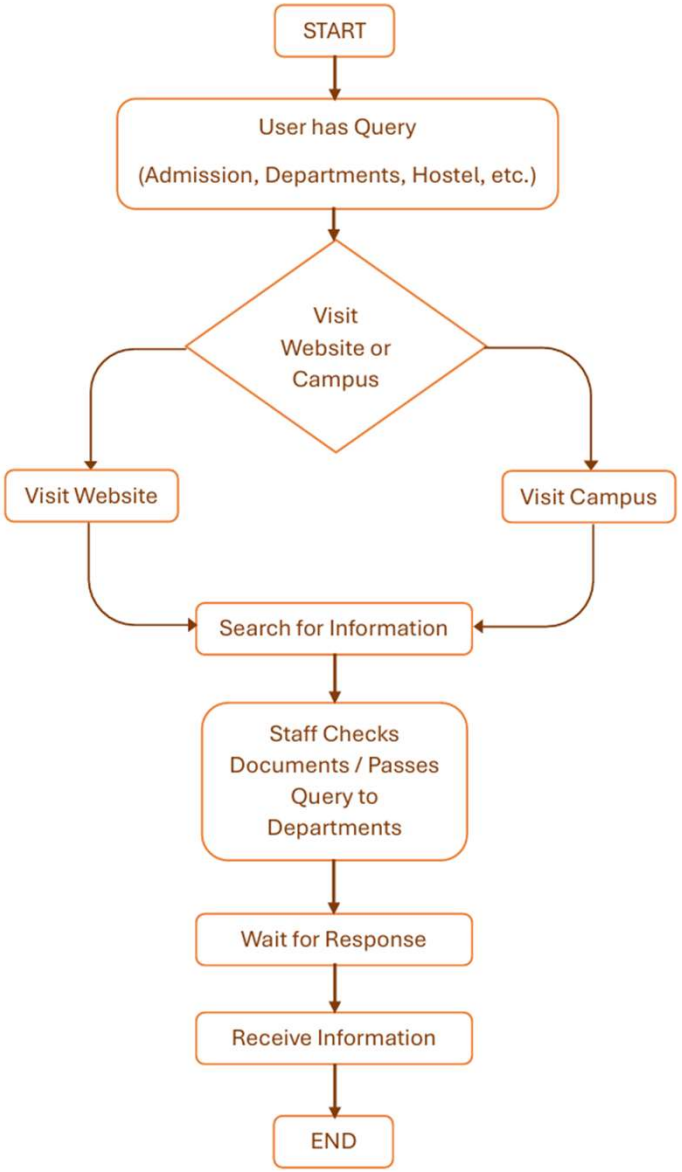
- **Environment**

VS Code

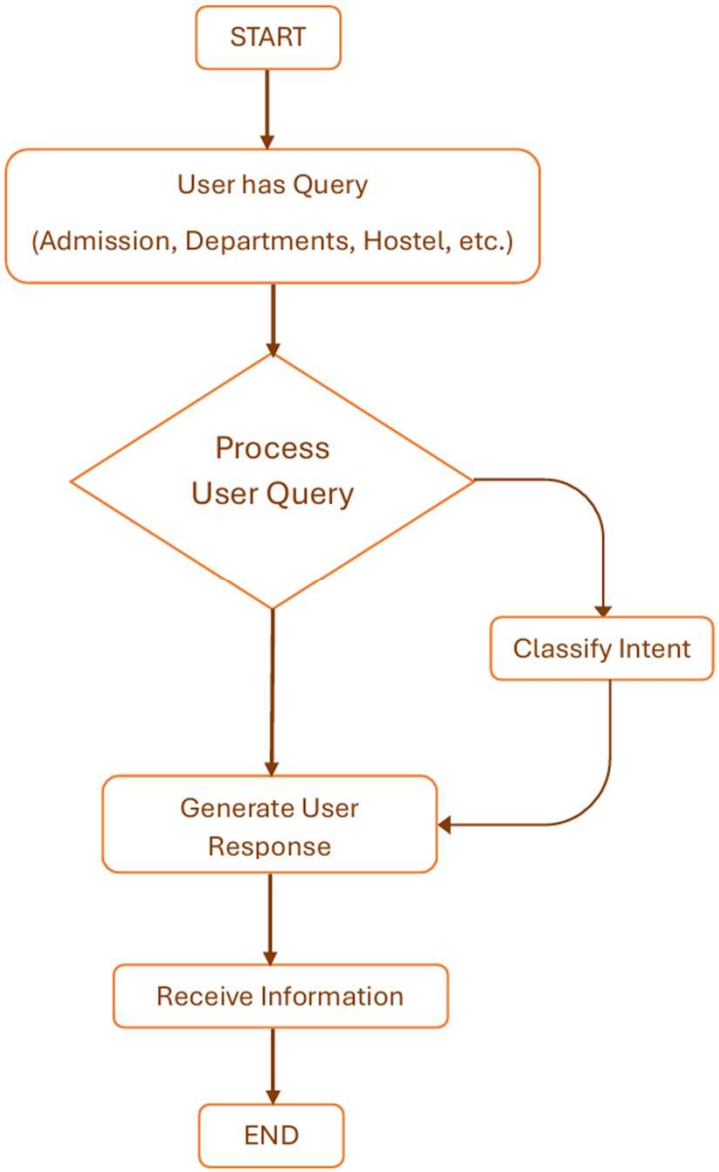
Python Virtual Environment

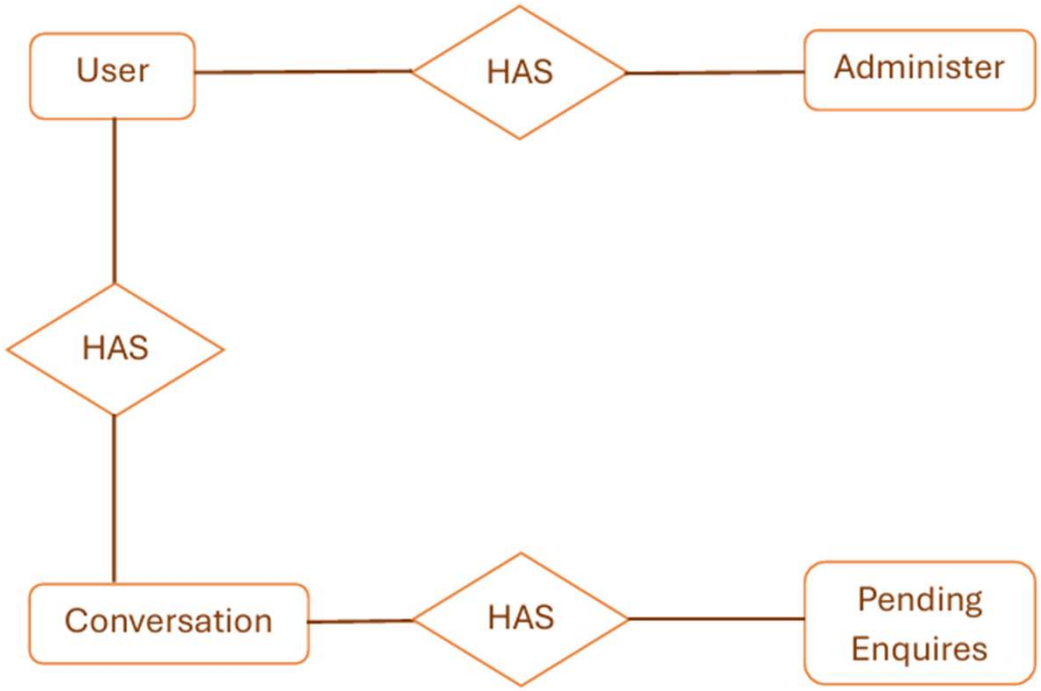
Browser for deployment testing

System Flow Chart (Existing System)



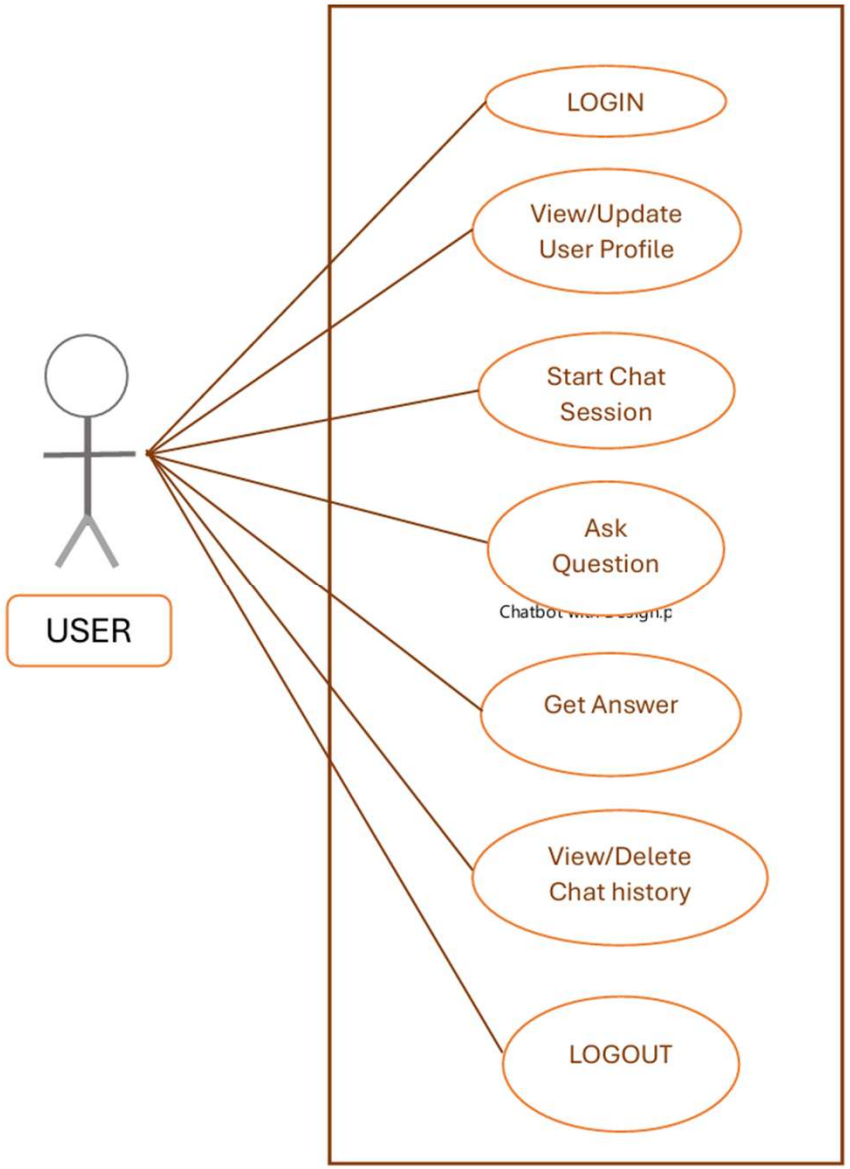
System Flow Chart (Chatbot System)



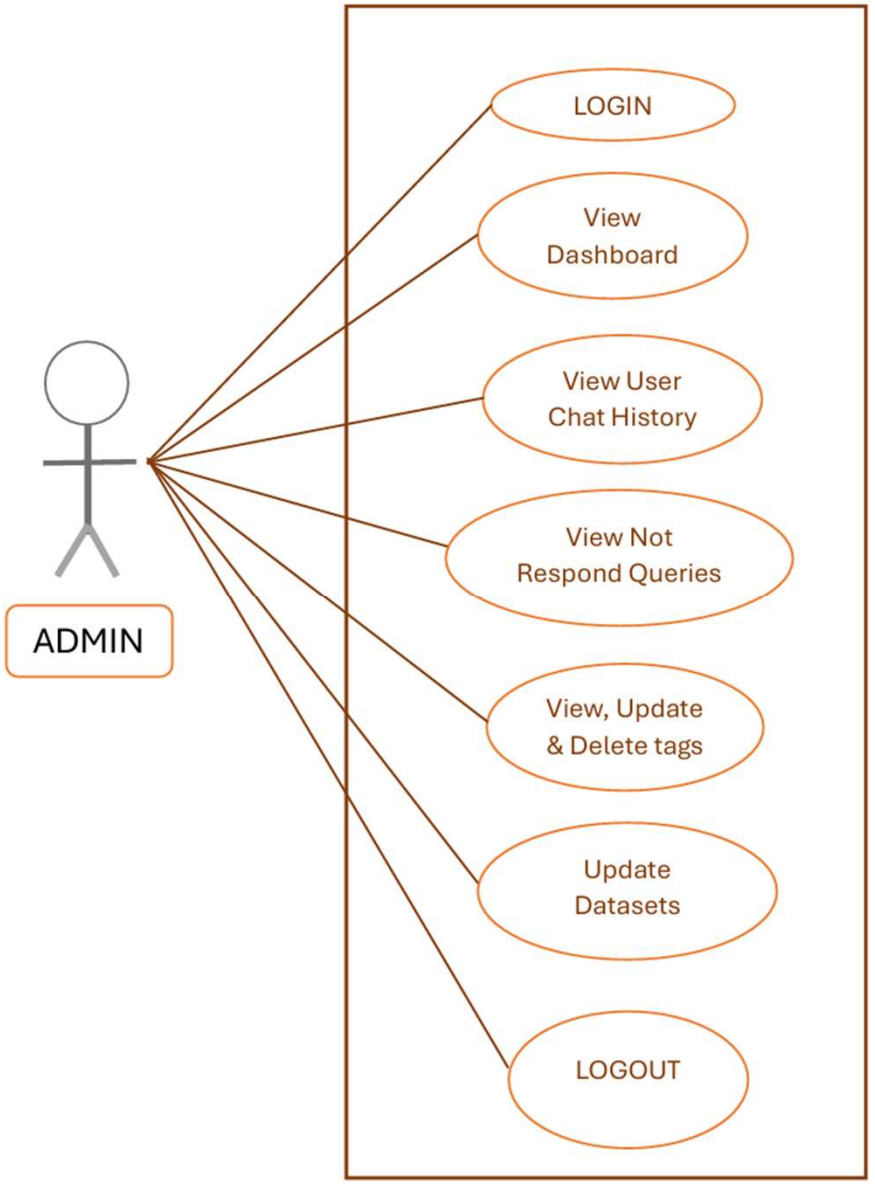


E-R Diagram(ERD)

Use Case Diagram (User)

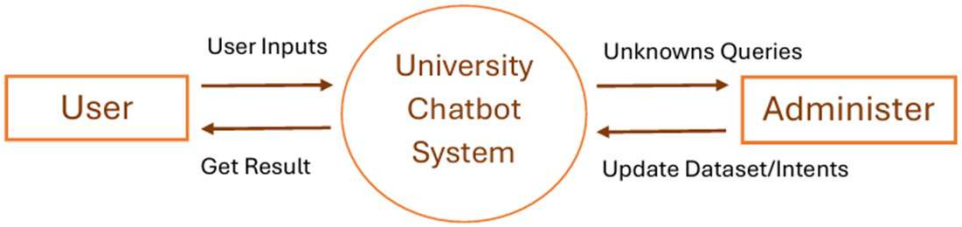


Use Case Diagram (Admin)

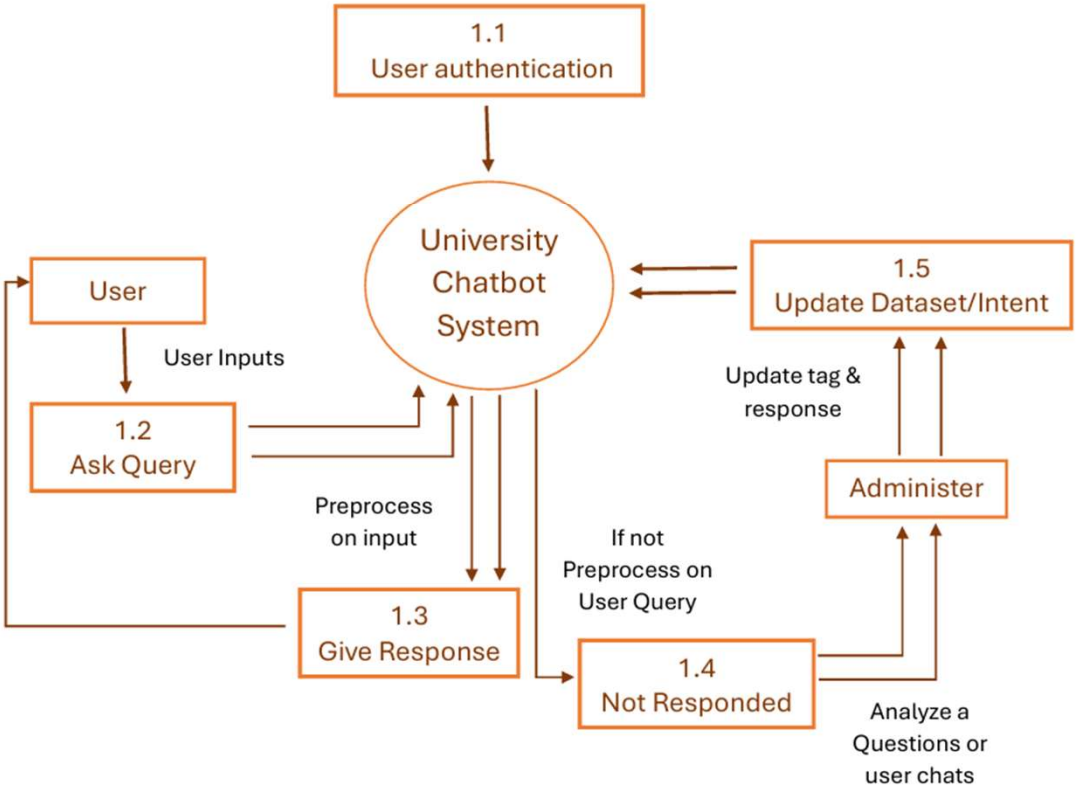


Data Flow Diagram(DFD)

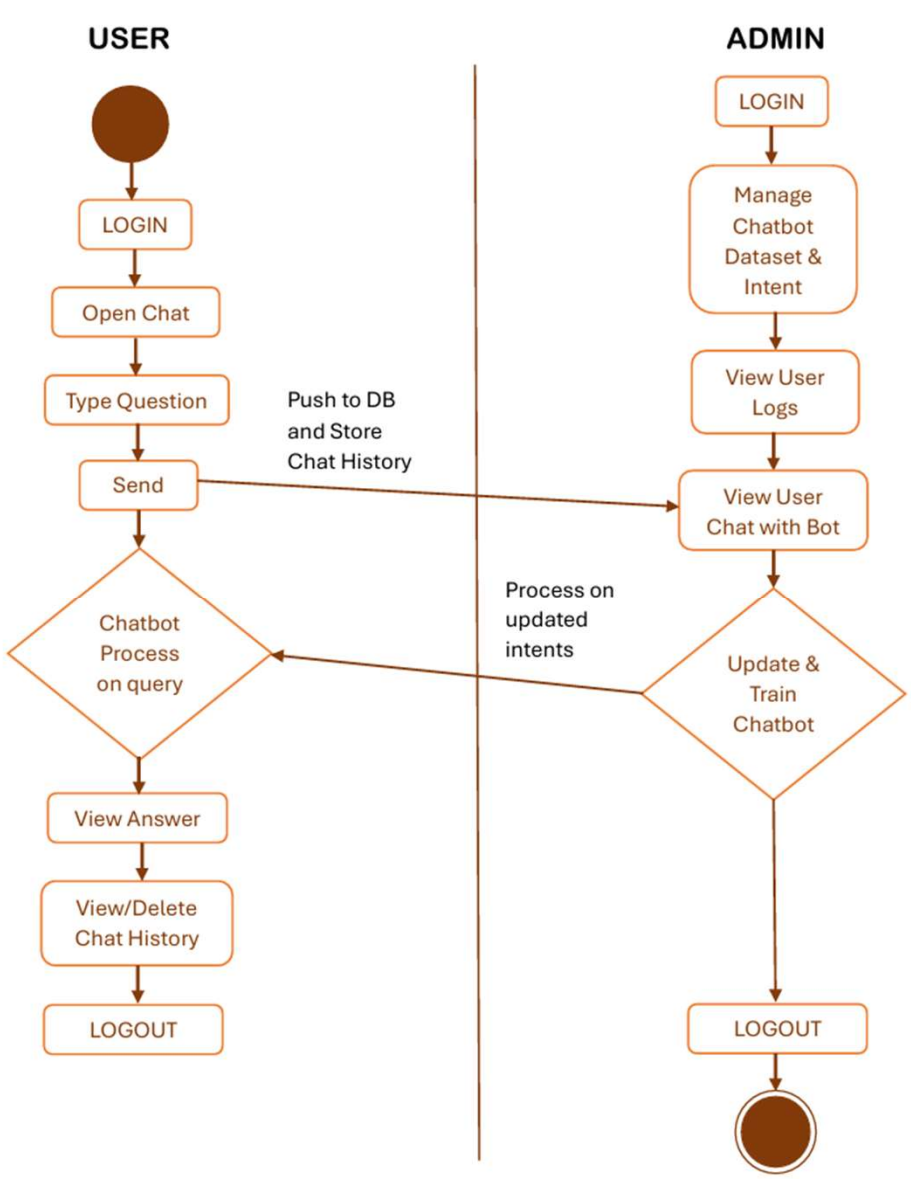
LEVEL 0:



LEVEL 1:



Activity Diagram



Database Schema

1. User Table Structure (ChatBot_user)

Column Name	Data Type	Description
_id	ObjectId	MongoDB internal ID
id	Integer	Auto-increment user ID
full_name	String	User's full name
username	String	Unique login username
email	String	User email address
password	String	Plain password (should be hashed in production)
gender	String	male / female
role	String	student / parent / faculty / staff / other
profile_image	String	Profile picture path
joined_date	DateTime	Registration timestamp
status	String	active / inactive

2. Admin User Table (ChatBot_adminuser)

Column Name	Data Type	Description
_id	ObjectId	MongoDB auto ID
username	String	Admin username
email	String	Admin email
password	String	Admin password

3. Pending Questions Table (ChatBot_pendingquestion)

Field Name	Data Type	Description
_id	ObjectId	MongoDB internal ID
id	Integer	Unique question ID
user_id	Integer	FK → User.id
username	String	Username of the person who asked
question_text	String	User's actual question
model_tag	String	Chatbot's predicted tag
confidence	Float	Prediction confidence (0-1)
created_at	DateTime	When question was asked
is_resolved	Boolean	false = pending, true = handled
admin_note	String	Admin explanation / fix note

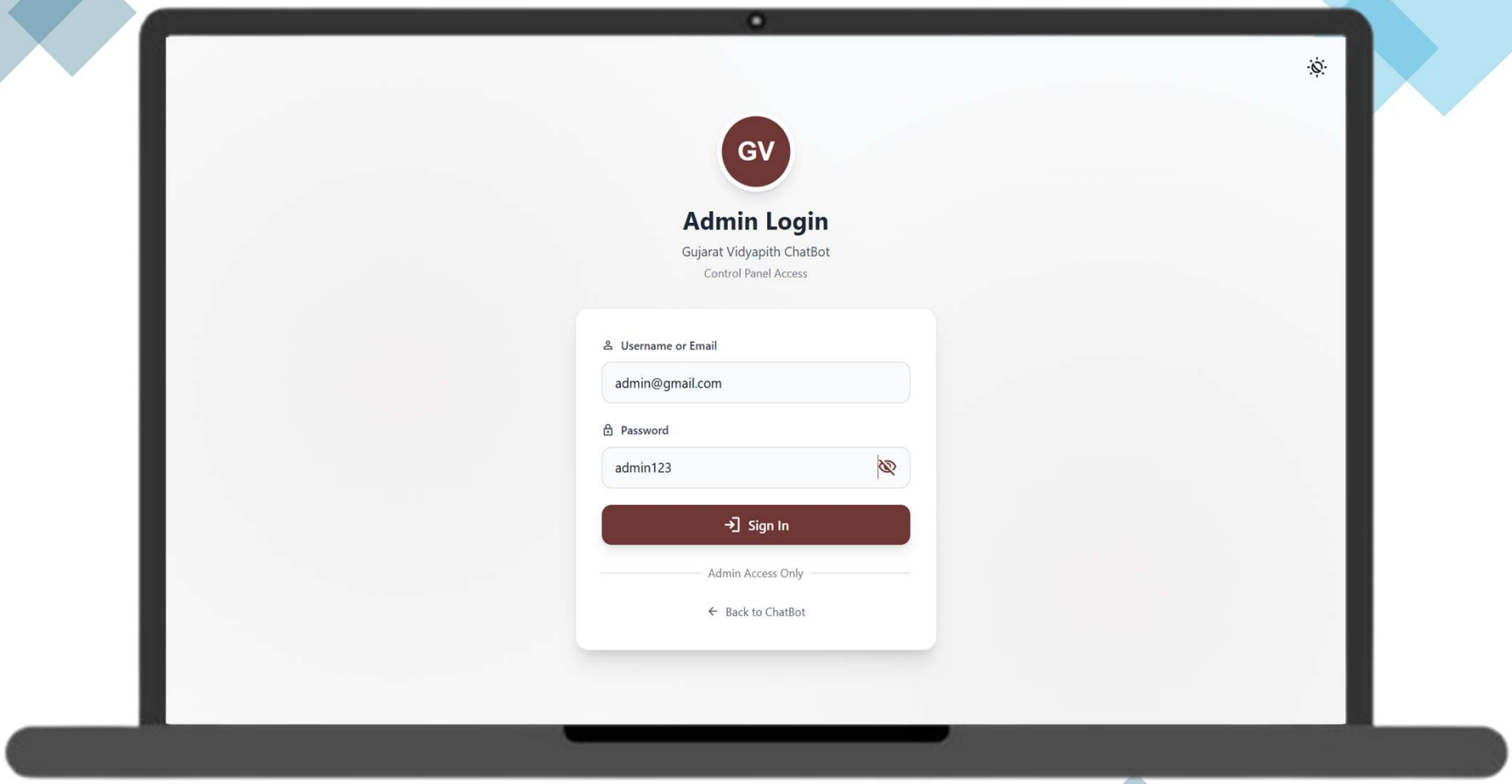
4. Conversation Table (ChatBot_conversation)

Column Name	Type	Description
_id	ObjectId	Unique conversation ID
id	Integer	Conversation row ID
user_id	Integer	FK → User.id
message	String	Chat message content
is_bot	Boolean	true = bot message, false = user
created_at	DateTime	Message timestamp

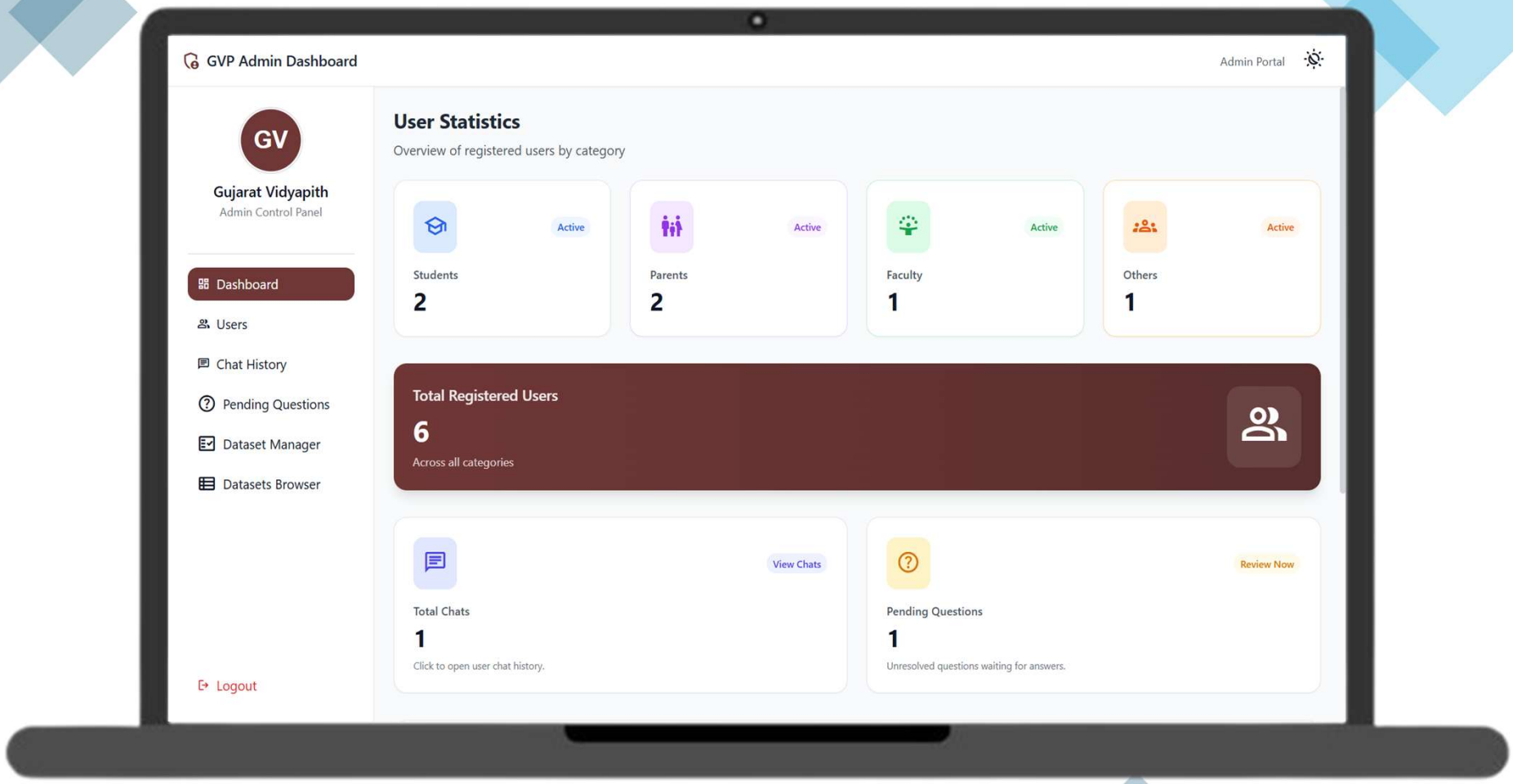
5. Chat Dataset (intents.json)

Field	Type	Description
tag	String	Intent identifier
patterns	Array	User input examples
responses	Array	Bot output responses

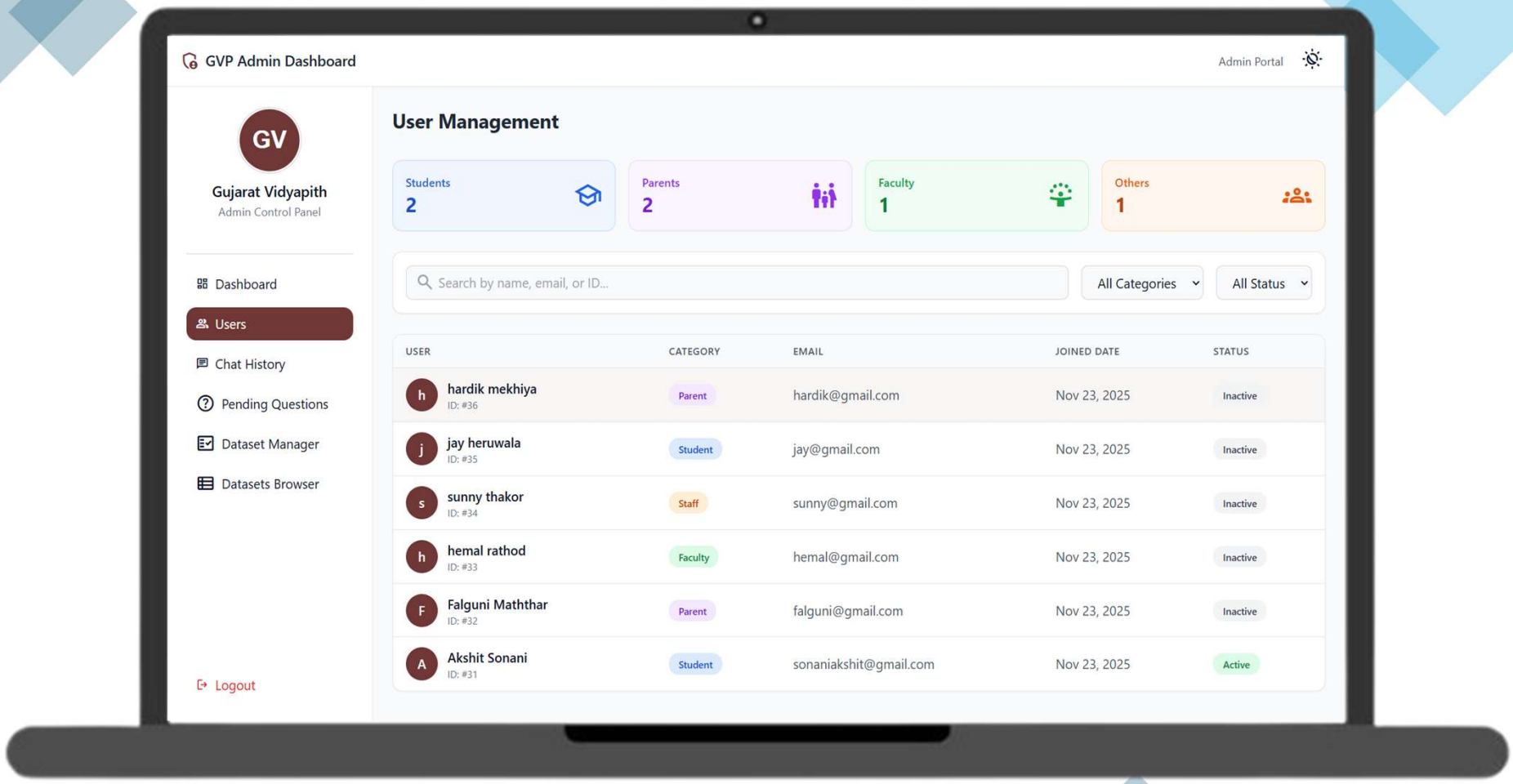
Admin Dashboard



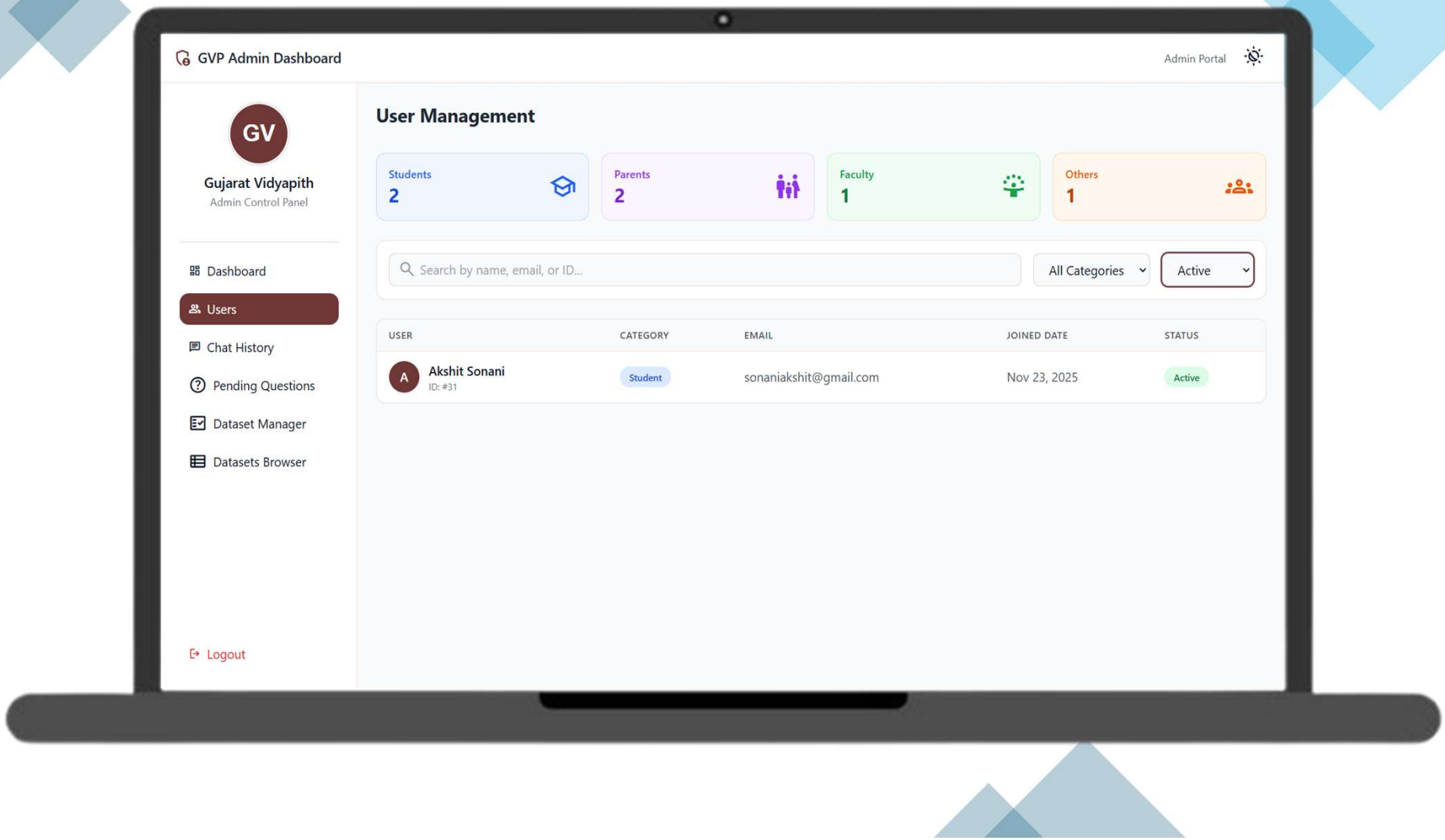
1. Admin Login

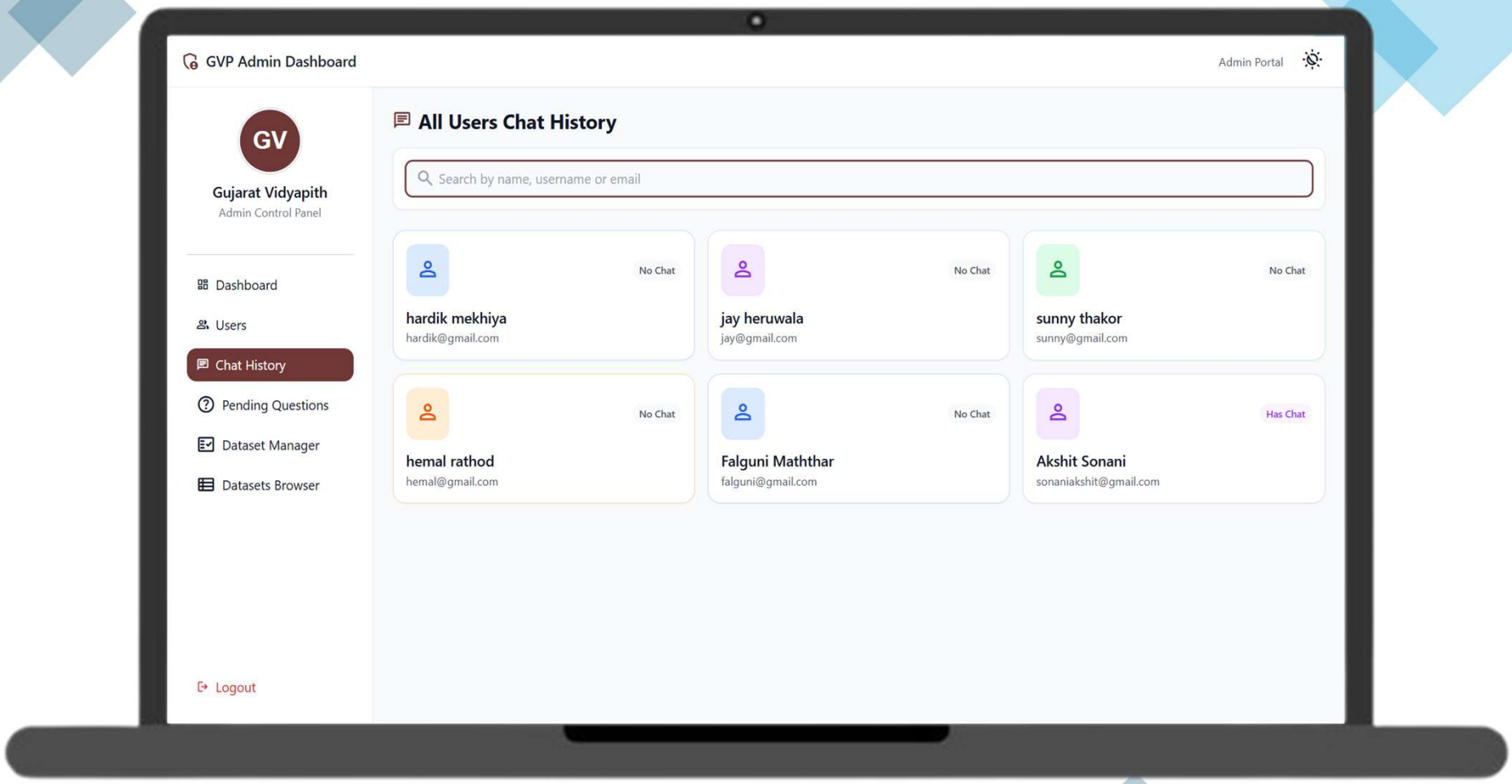


2. Admin Dashboard & Statistics

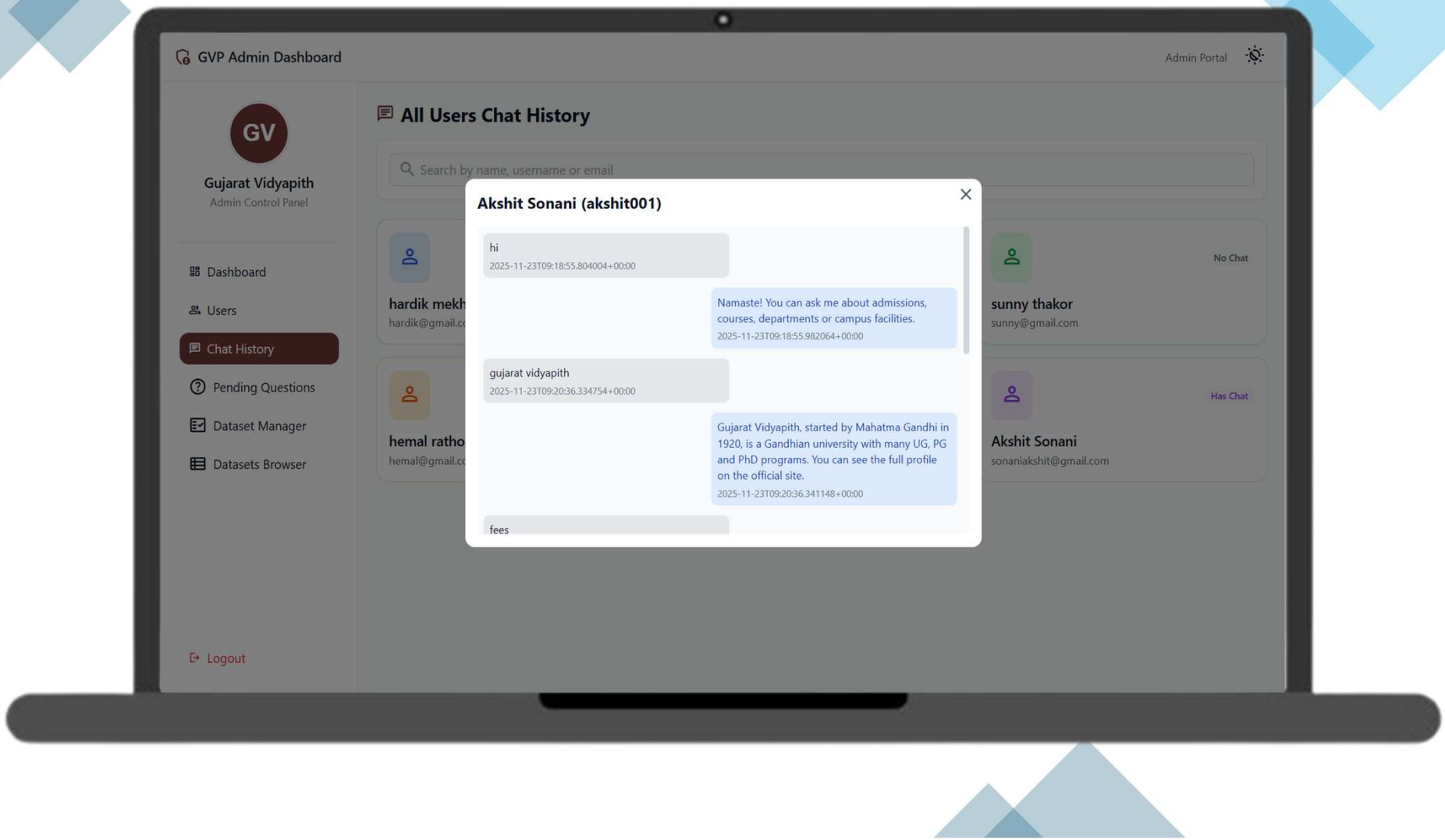


3. User Management


GVP Admin Dashboard
Admin Portal
GV
Gujarat Vidyapith
Admin Control Panel
Dashboard
Users
Chat History
Pending Questions
Dataset Manager
Datasets Browser
Logout
User Management
Students
2
Parents
2
Faculty
1
Others
1
Search by name, email, or ID...
All Categories
Active
USER
CATEGORY
EMAIL
JOINED DATE
STATUS
A
Akshit Sonani
ID: #31
Student
sonaniakshit@gmail.com
Nov 23, 2025
Active



4. All Users Chat History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Users
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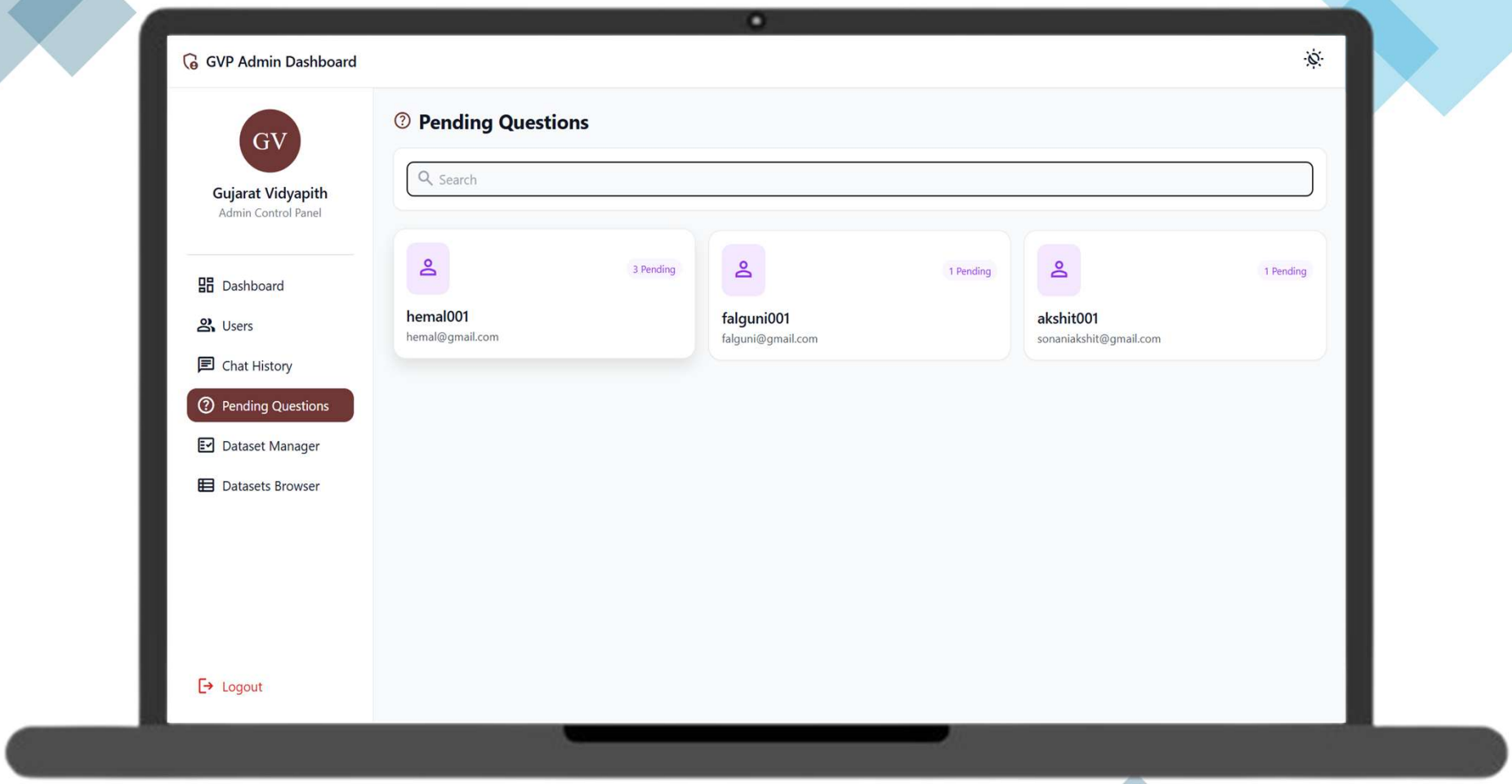
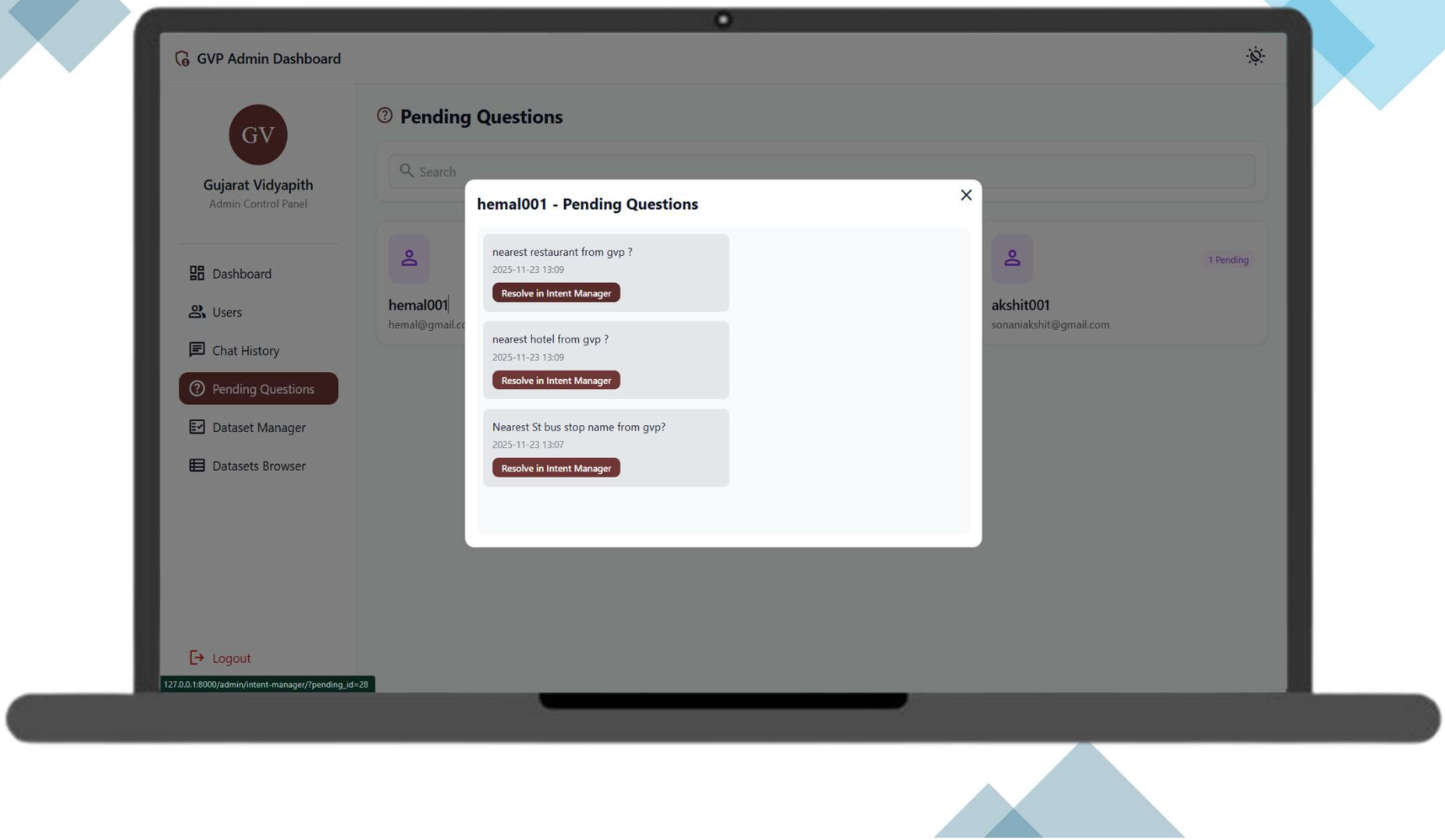
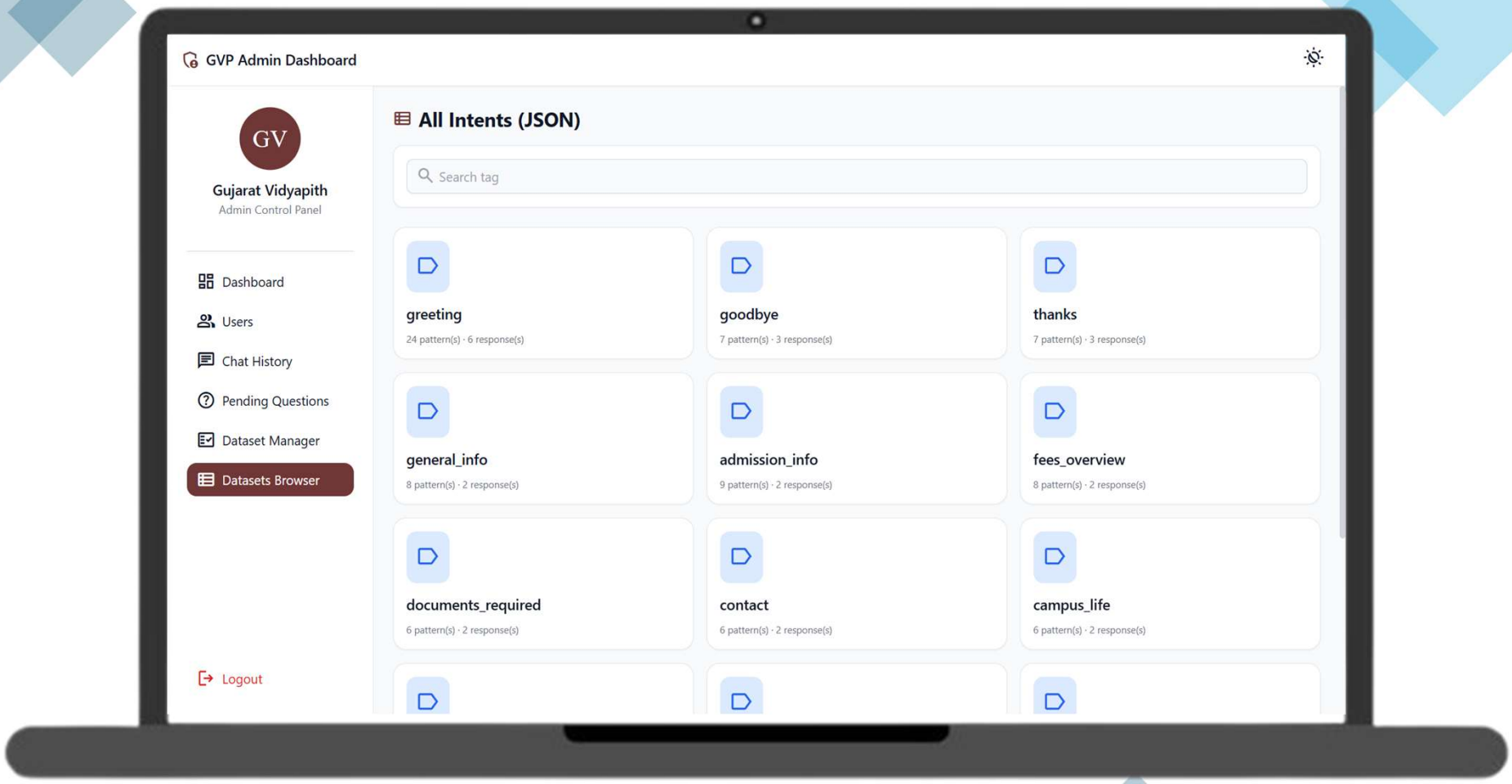
Dataset Manager
Datasets Browser
Logout
All Users Chat History
Search by name, username or email
hardik mekh
hardik@gmail.co
No Chat
sunny thakor
sunny@gmail.com
hemal ratho
hemal@gmail.co
Has Chat
Akshit Sonani
sonaniakshit@gmail.com
Akshit Sonani (akshit001)
hi
2025-11-23T09:18:55.804004+00:00
Namaste! You can ask me about admissions, courses, departments or campus facilities.
2025-11-23T09:18:55.982064+00:00
gujarat vidyapith
2025-11-23T09:20:36.334754+00:00
Gujarat Vidyapith, started by Mahatma Gandhi in 1920, is a Gandhian university with many UG, PG and PhD programs. You can see the full profile on the official site.
2025-11-23T09:20:36.341148+00:00
fees

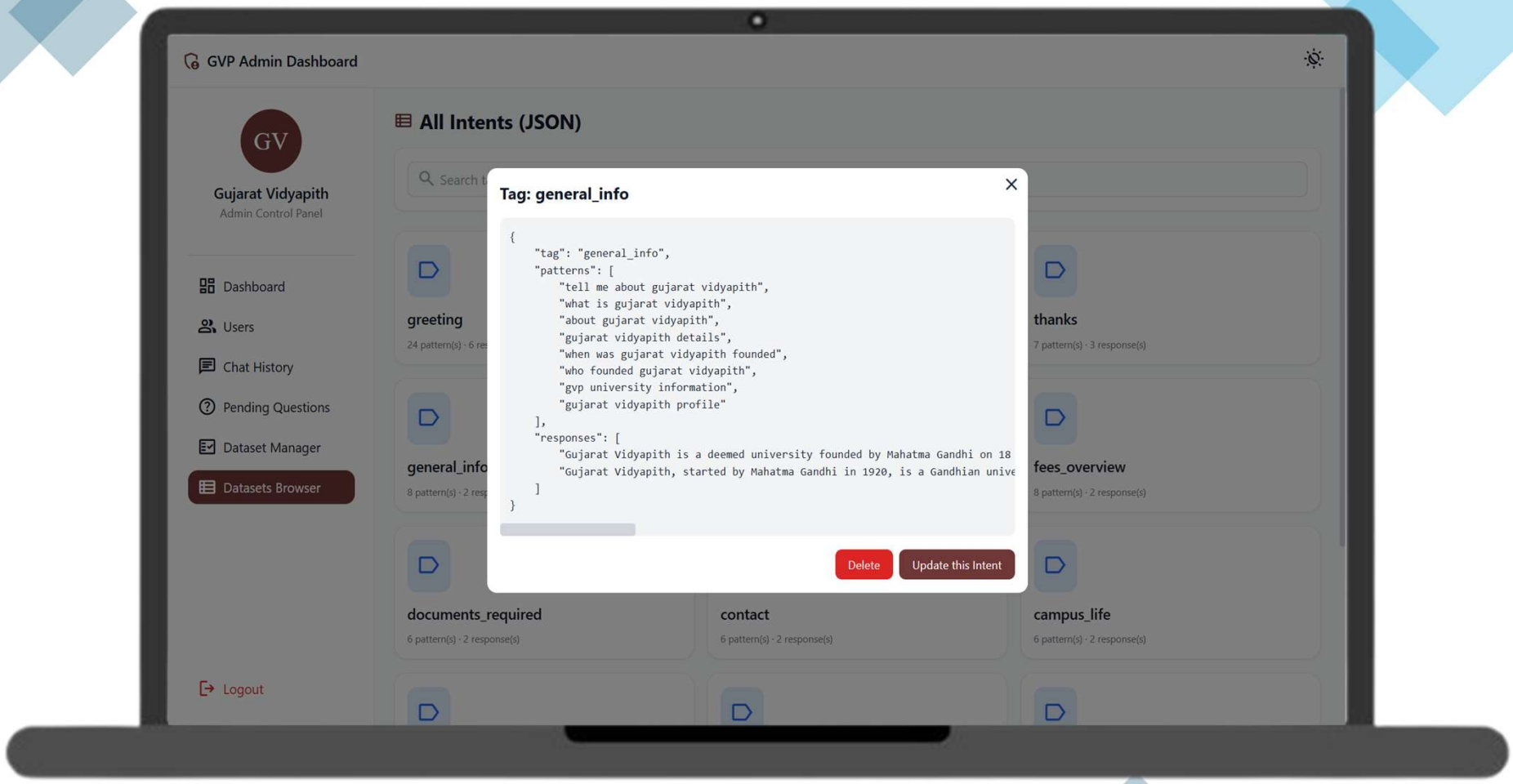


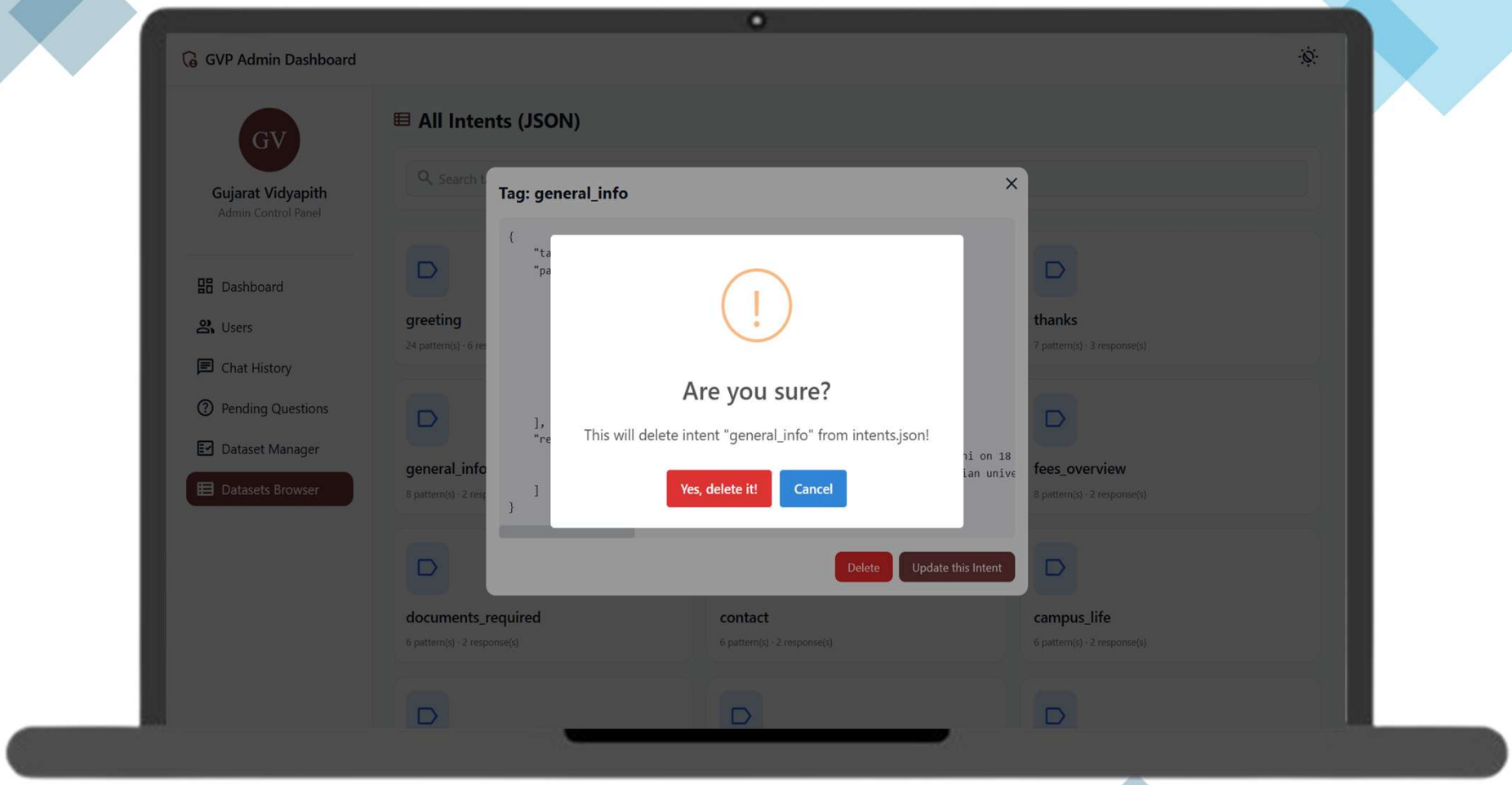
5. Pending Questions


GVP Admin Dashboard
GV
Gujarat Vidyapith
Admin Control Panel
Dashboard
Users
Chat History
Pending Questions
Dataset Manager
Datasets Browser
Logout
127.0.0.1:8000/admin/intent-manager/?pending_id=28
Pending Questions
Search
hemal001
akshit001
sonaniakshit@gmail.com
1 Pending
hemal001 - Pending Questions
nearest restaurant from gvp ?
2025-11-23 13:09
Resolve in Intent Manager
nearest hotel from gvp ?
2025-11-23 13:09
Resolve in Intent Manager
Nearest St bus stop name from gvp?
2025-11-23 13:07
Resolve in Intent Manager

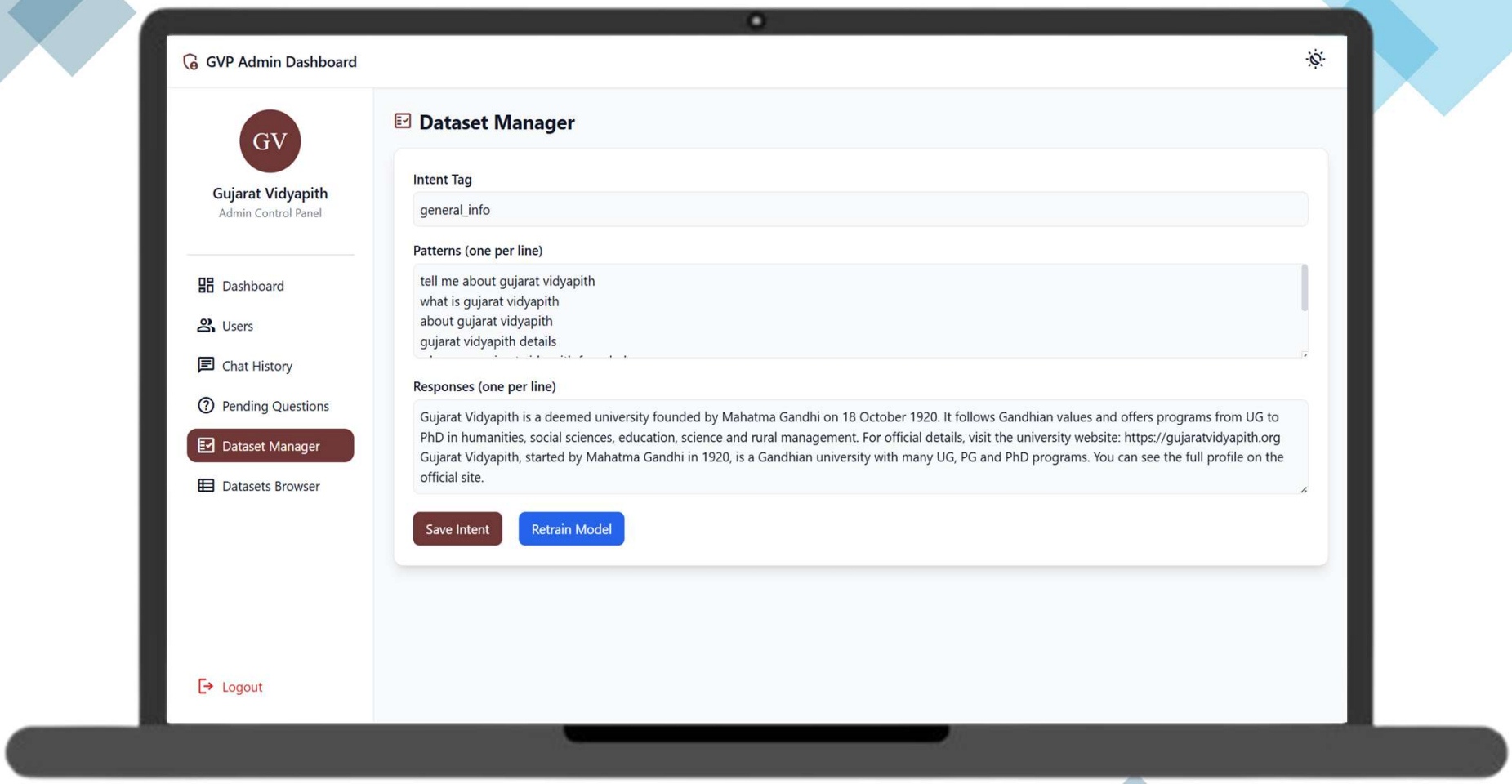


6. Datasets Browser

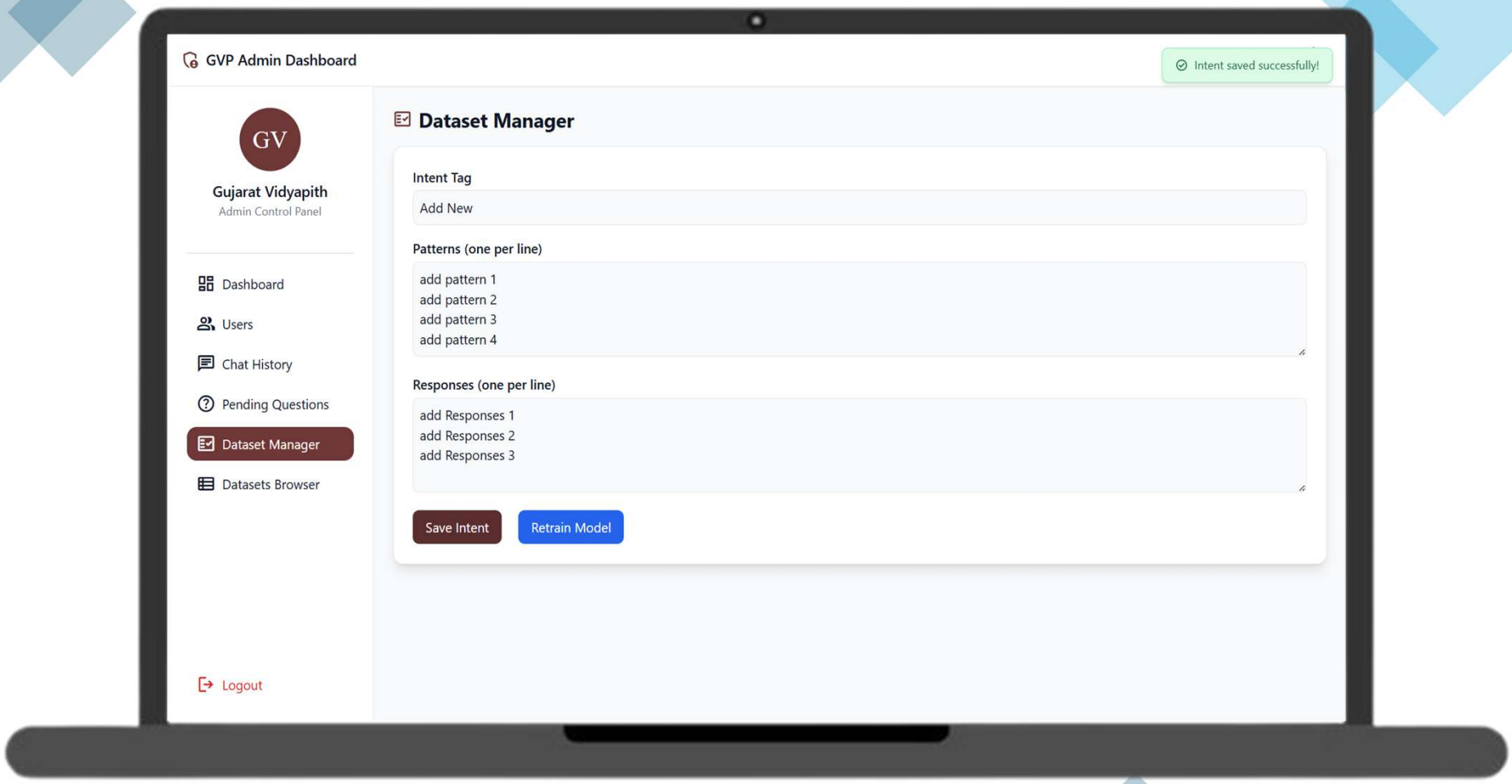

GVP Admin Dashboard
GV
Gujarat Vidyapith
Admin Control Panel
Dashboard
Users
Chat History
Pending Questions
Dataset Manager
Datasets Browser
Logout
All Intents (JSON)
Tag: general_info
{
"tag": "general_info",
"patterns": [
"tell me about gujarat vidyapith",
"what is gujarat vidyapith",
"about gujarat vidyapith",
"gujarat vidyapith details",
"when was gujarat vidyapith founded",
"who founded gujarat vidyapith",
"gvp university information",
"gujarat vidyapith profile"
],
"responses": [
"Gujarat Vidyapith is a deemed university founded by Mahatma Gandhi on 18
"Gujarat Vidyapith, started by Mahatma Gandhi in 1920, is a Gandhian unive
]
}
Delete
Update this Intent
greeting
24 pattern(s) · 6 re
thanks
7 pattern(s) · 3 response(s)
general_info
8 pattern(s) · 2 resp
fees_overview
8 pattern(s) · 2 response(s)
documents_required
6 pattern(s) · 2 response(s)
contact
6 pattern(s) · 2 response(s)
campus_life
6 pattern(s) · 2 response(s)



7.Delete above(general_info) intent from JSON file

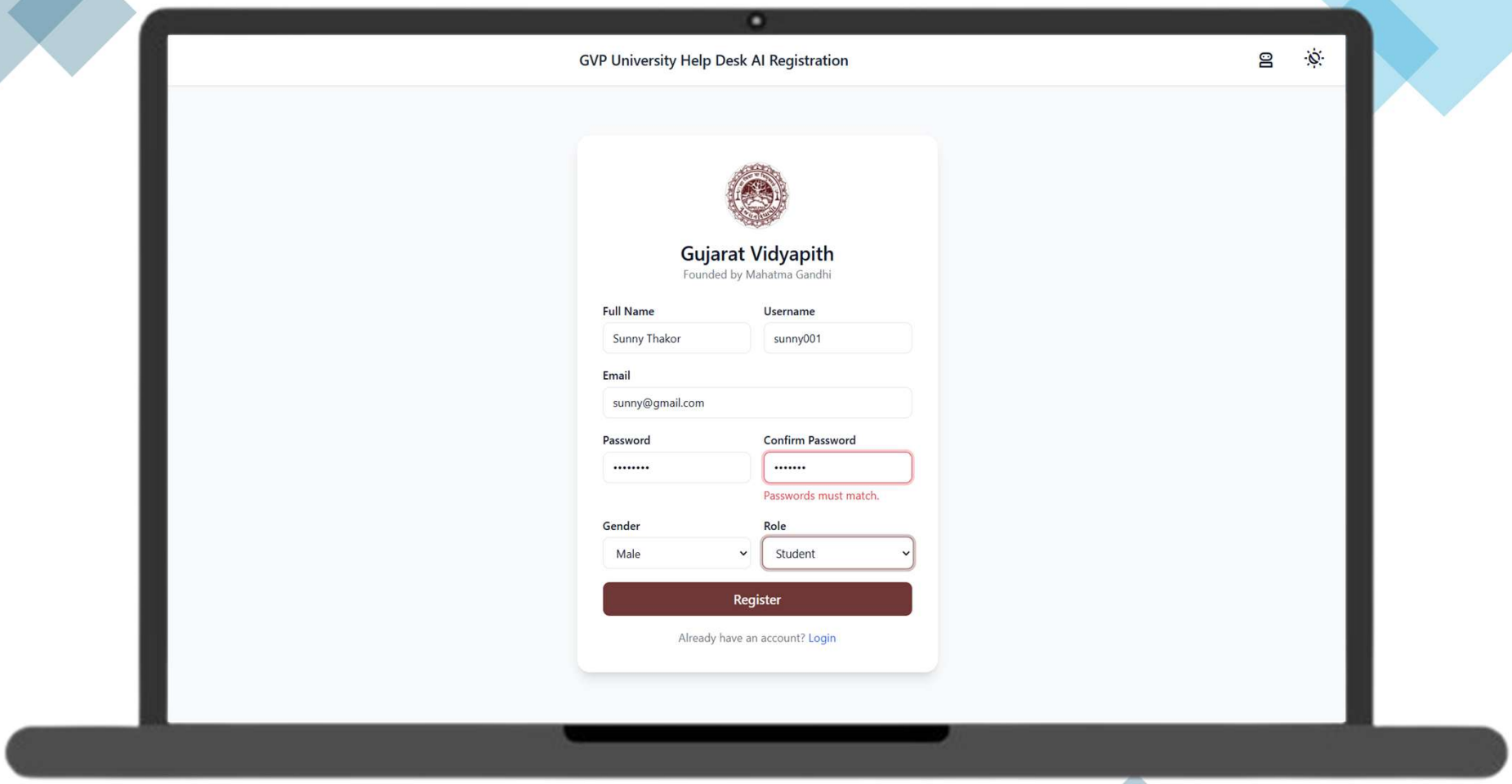


8. Update above(general_info) intent from JSON file

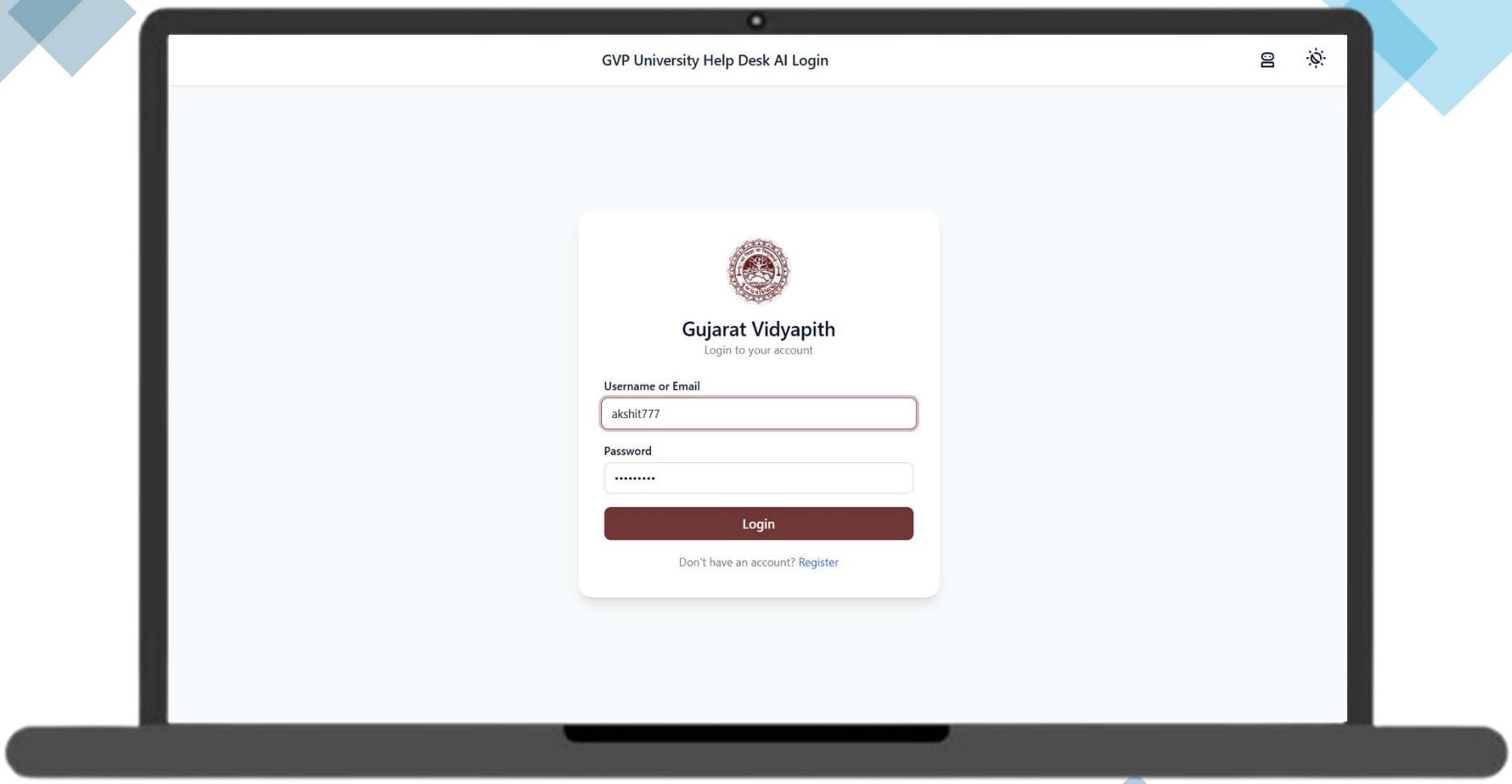


9. Add new intent into JSON file

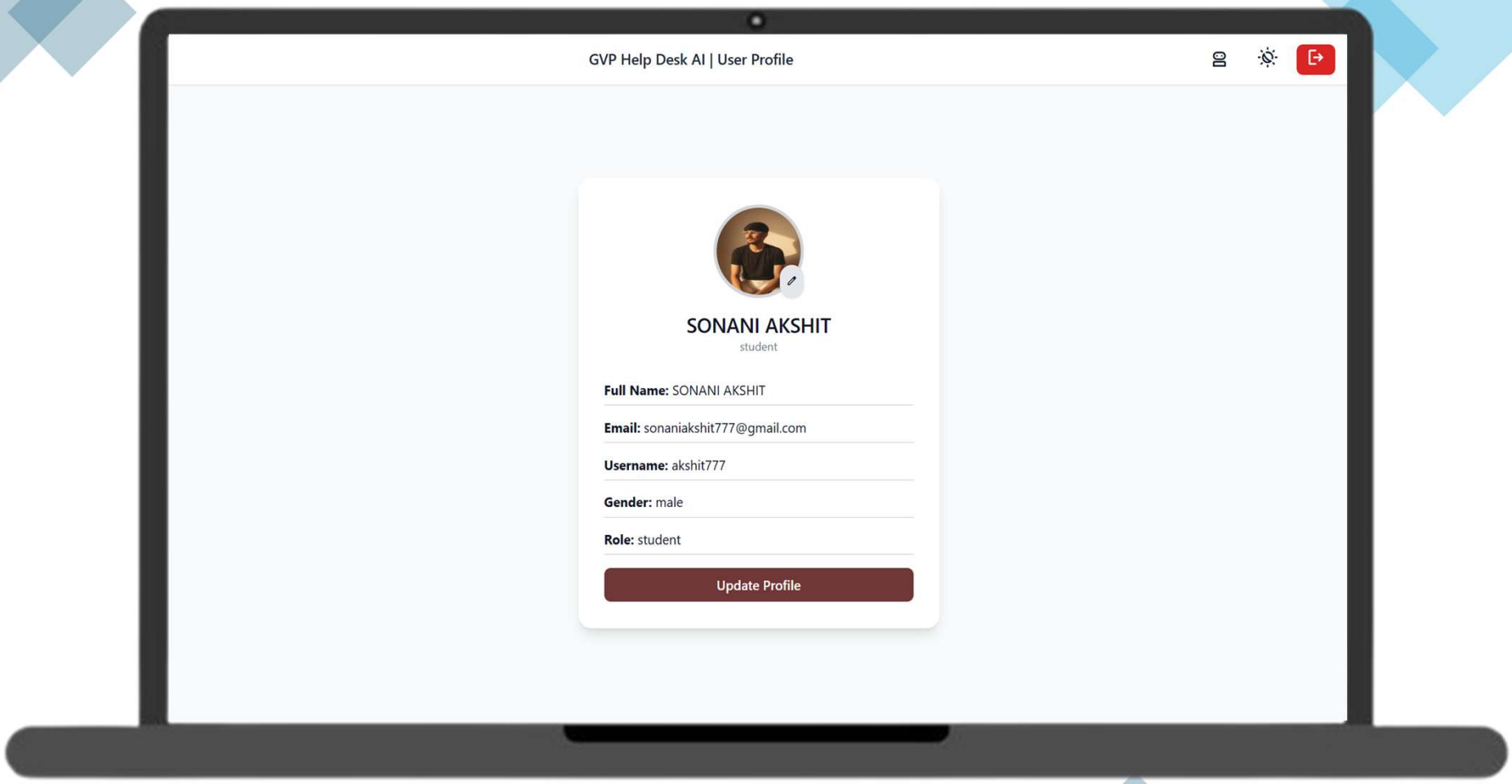
User Side Pages



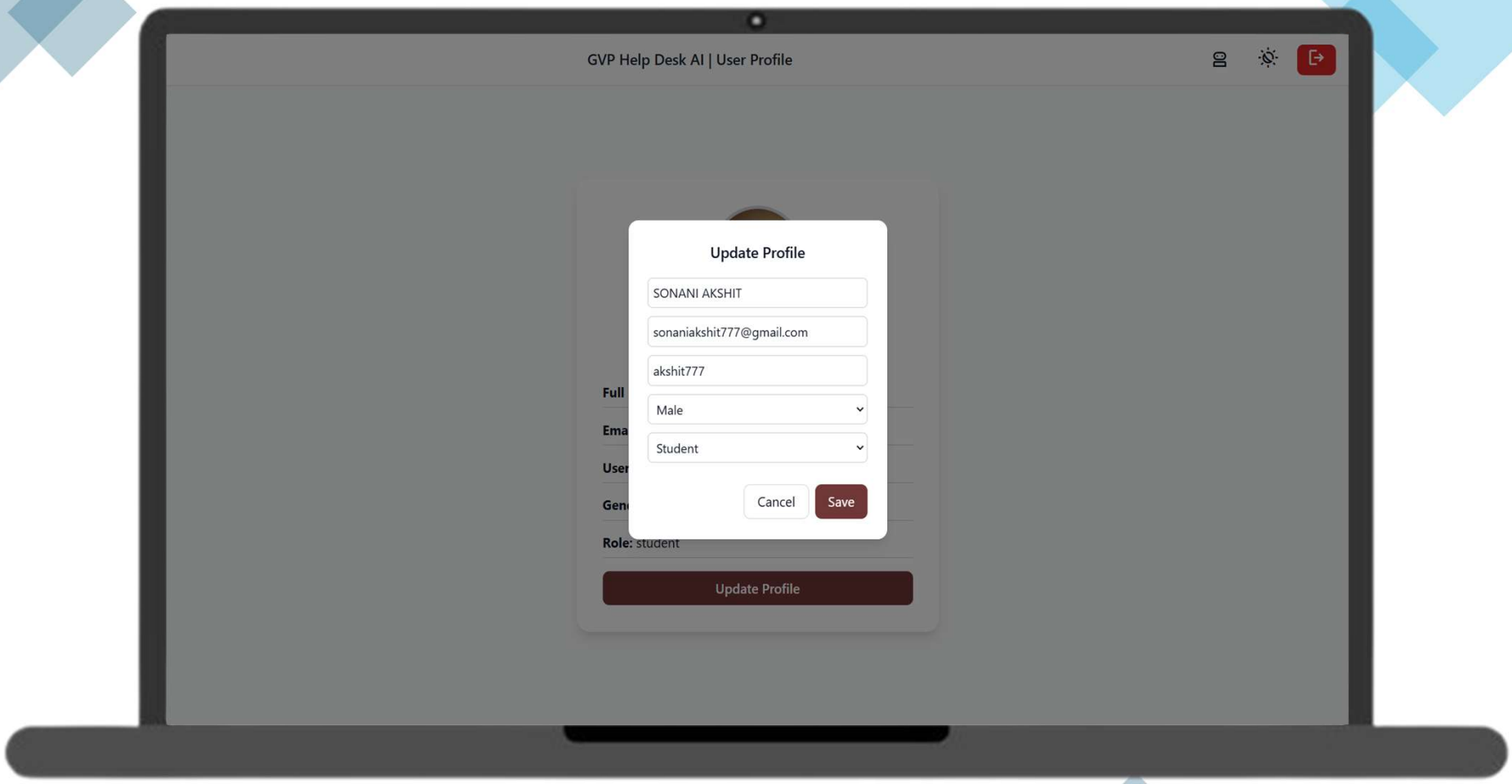
1. User Registration


GVP University Help Desk AI Login
Gujarat Vidyapith
Login to your account
Username or Email
akshit777
Password
Login
Don't have an account? Register

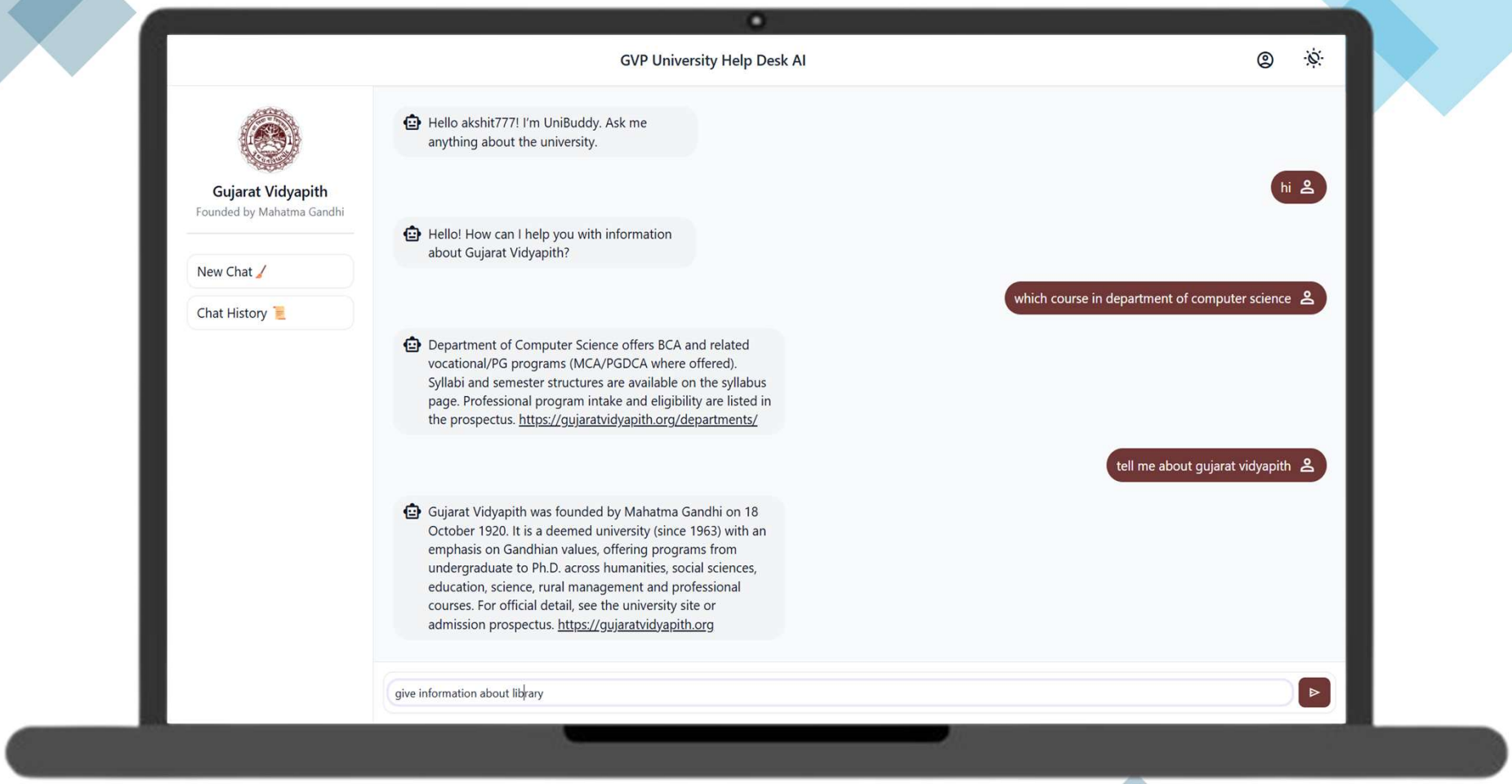
2. User Login



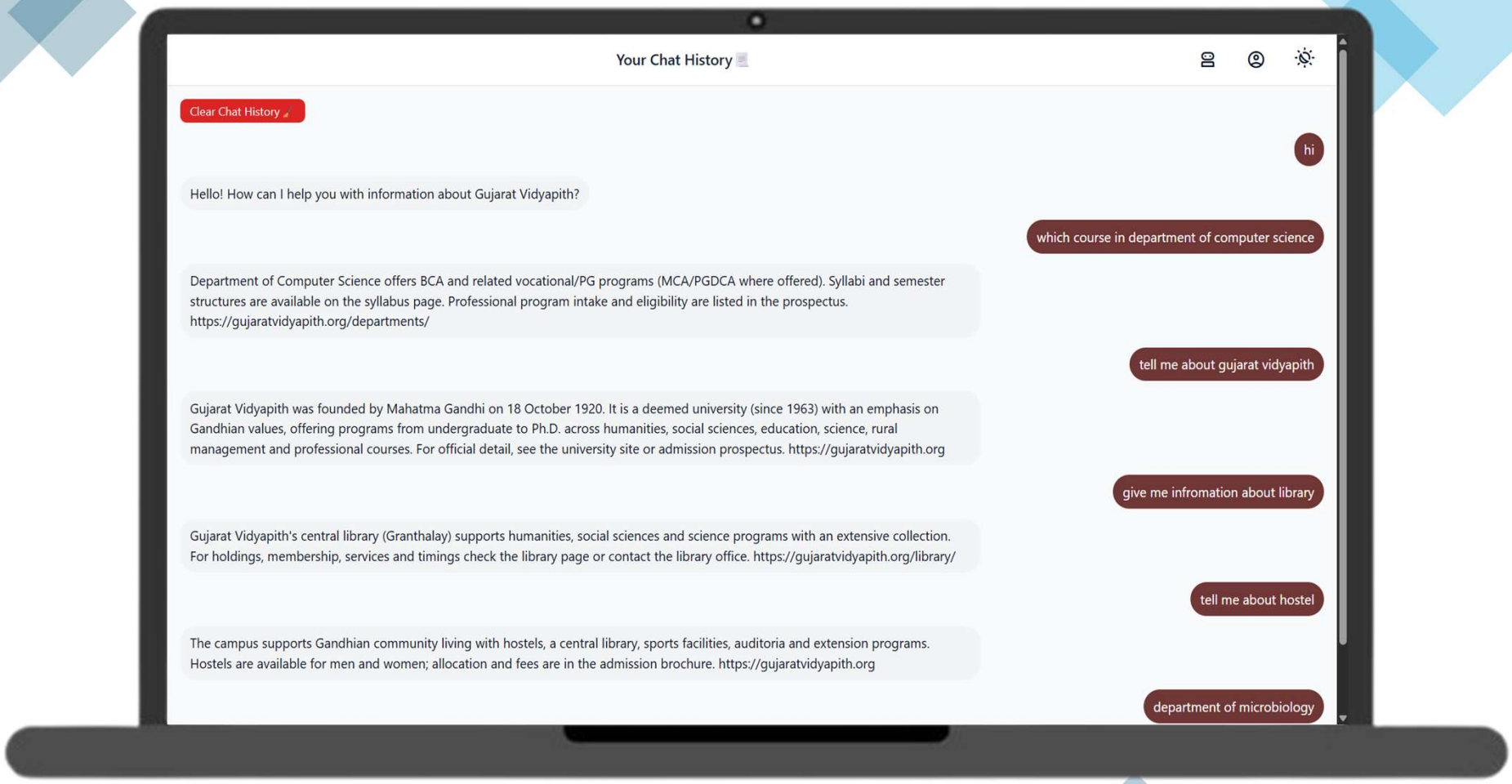
3. User Profile



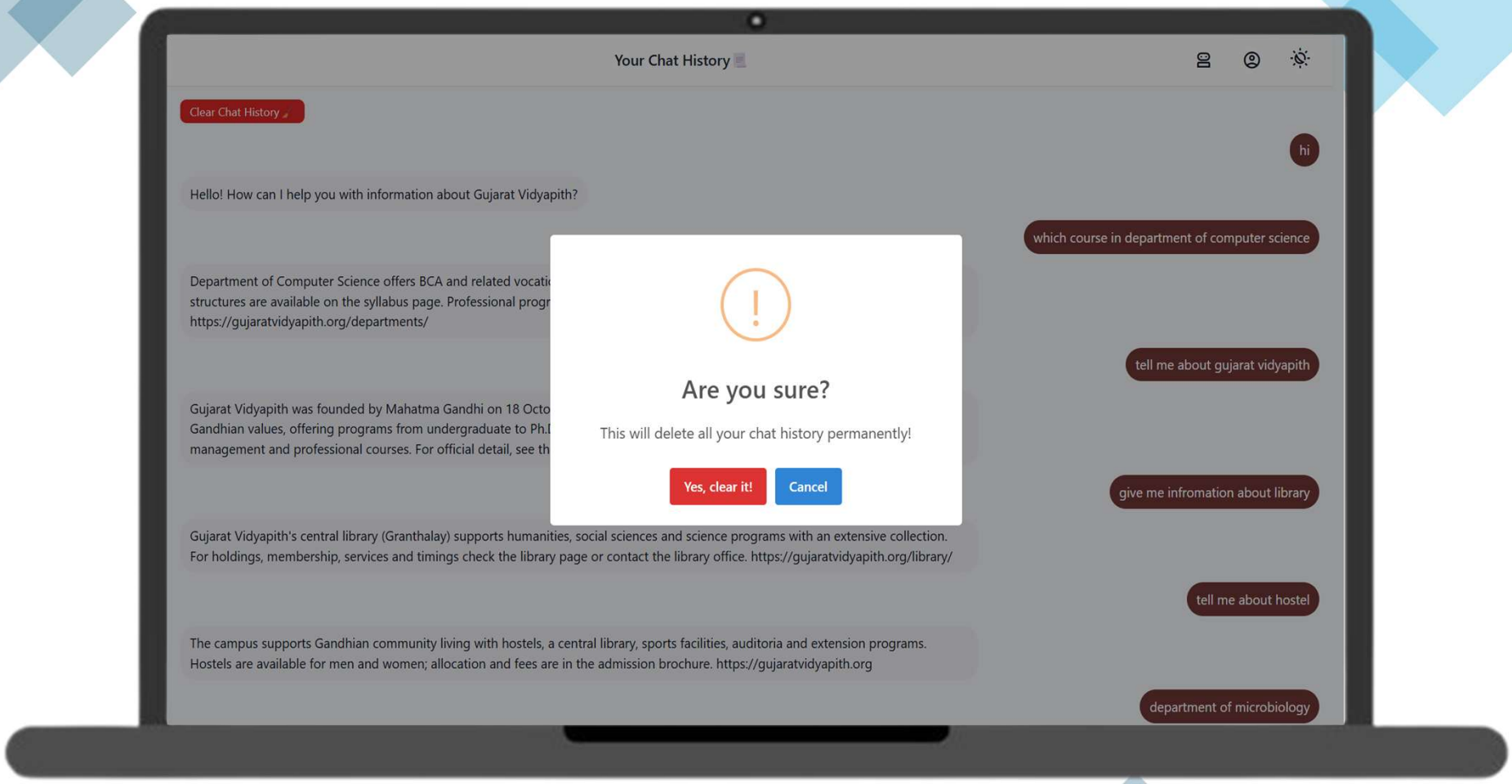
4. Update user profile



5. Chatbot Conversation



6. User Chat History



7. Clear Chat History

Limitations of the System

Not a Real-Time or Fully Accurate Source
The chatbot provides high-level guidance based on predefined data. It cannot give real-time updates such as seat availability, changing fee structures, or last-minute admission rules unless the dataset is manually updated.

No Official Decision-Making Ability
The system cannot make admission decisions, verify documents, allocate hostels, or process applications. It only provides general information and links to official sources.

Limited Handling of Complex or Ambiguous Queries
If the user asks a vague, mixed, or highly detailed question, the chatbot may fail to interpret it correctly and revert to fallback messages or clarification prompts.

No Automatic Content Updates
The system does not crawl the university website or prospectus. When university information changes, the dataset and responses must be updated manually.

Language and Input Limitations
The chatbot performs best with clean English queries. Highly informal messages, spelling errors, mixed languages (like Gujarati + English), or slang can reduce accuracy unless additional training data is provided.

Proposed Enhancements

Automatic Model Retraining

At present, the chatbot is trained manually using a fixed set of intents and responses. In the future, the system can be upgraded to automatically retrain the model based on real chat logs. This would include:

Multilingual Support

Currently, the chatbot primarily supports English. A major enhancement will be adding support for multiple languages such as Gujarati, Hindi and Hinglish.
Future features may include:

- Automatic language detection
- Separate datasets for additional languages
- Translation-based response generation this will make the chatbot more accessible to local users and improve usability for non-English speakers.

Voice Interaction

In future versions, voice input and output can be integrated using speech-to-text and text-to-speech APIs.

This will allow users to communicate with the chatbot verbally, making the system easier to use for visually impaired students or users who prefer voice-based interaction.

Bibliography

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https://www.mongodb.com/docs

- **PyTorch Documentation**
Meta AI Research. *PyTorch Machine Learning Framework Documentation*.
https://pytorch.org/docs

- **NLTK Documentation**
Bird, S., Klein, E., & Loper, E. *Natural Language Processing with Python*.
https://www.nltk.org

- **Djongo Documentation**
Djongo: MongoDB Connector for Django ORM.
https://www.djongomapper.com

- **University Website (for informational training data)**
Gujarat Vidyapith. *Official University Website*:
https://gujaratvidyapith.org

- **GitHub Repositories (Open Source Chatbot Examples)**
Various developers. *Chatbot implementations using Python, NLP and Django* (referenced for understanding patterns and structure).
https://github.com

Thank You…