🎓 Campus GPT — AI-Powered Campus Assistant

📌 Project Overview

Campus GPT is an AI-powered virtual campus assistant designed to answer questions related to **college facilities, events, placements, departments, and academic processes**.
The system integrates **Dialogflow CX**, **Gemini API**, and **Google Cloud Storage (GCS)** to deliver accurate, secure, and context-aware responses through a web-based chatbot interface.

This project emphasizes **cloud architecture, AI workflow, and system design**, and is fully understandable even without a live deployment.

🧠 How Campus GPT Works (High-Level)

1. Campus-related data (FAQs, events, placement information, department details) is stored in **Google Cloud Storage**.
2. A **Dialogflow CX agent** manages conversational flow using intents, entities, and flows.
3. A dedicated **Service Account** securely accesses:
   - Google Cloud Storage (to read campus data)
   - Gemini API (to generate intelligent, grounded responses)
4. User queries are handled via:
   - Dialogflow CX Web Demo **or**
   - A custom frontend chatbot interface
5. The final response is delivered to the user through the web UI.

✨ Key Features

- 🔐 Secure campus data storage using Google Cloud Storage buckets
- 🤖 AI-powered responses using Gemini API
- 💬 Conversational AI built with Dialogflow CX
- 🌐 Web-based chatbot interface (iframe or custom UI)

- 🧩 Modular frontend–backend architecture
- 📄 Well-documented, interview-ready system design

🏗 System Architecture (Conceptual Overview)

- **Frontend**: Web interface for user interaction
- **Backend**: Handles API calls, webhooks, and AI orchestration
- **Dialogflow CX**: Manages intents, entities, and conversation flow
- **Gemini API**: Generates intelligent responses using campus context
- **Google Cloud Storage**: Stores structured campus knowledge

Request Flow:
User → Frontend → Backend → Dialogflow CX → Gemini / GCS → Response → User

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📁 Project Structure (Simplified)

```
campus-gpt/
├─ frontend/     # Chat UI (HTML, CSS, JavaScript)
├─ backend/      # API server & Dialogflow webhook
├─ gcp-config/   # Service account config (excluded from Git)
├─ docs/         # Architecture & design documentation
└─ README.md
```

🔐 Security & Best Practices

- Service account keys are **never committed** to version control
- IAM roles follow the **principle of least privilege**
- Secure HTTPS communication for all endpoints
- API usage monitoring and cost control via GCP billing alerts

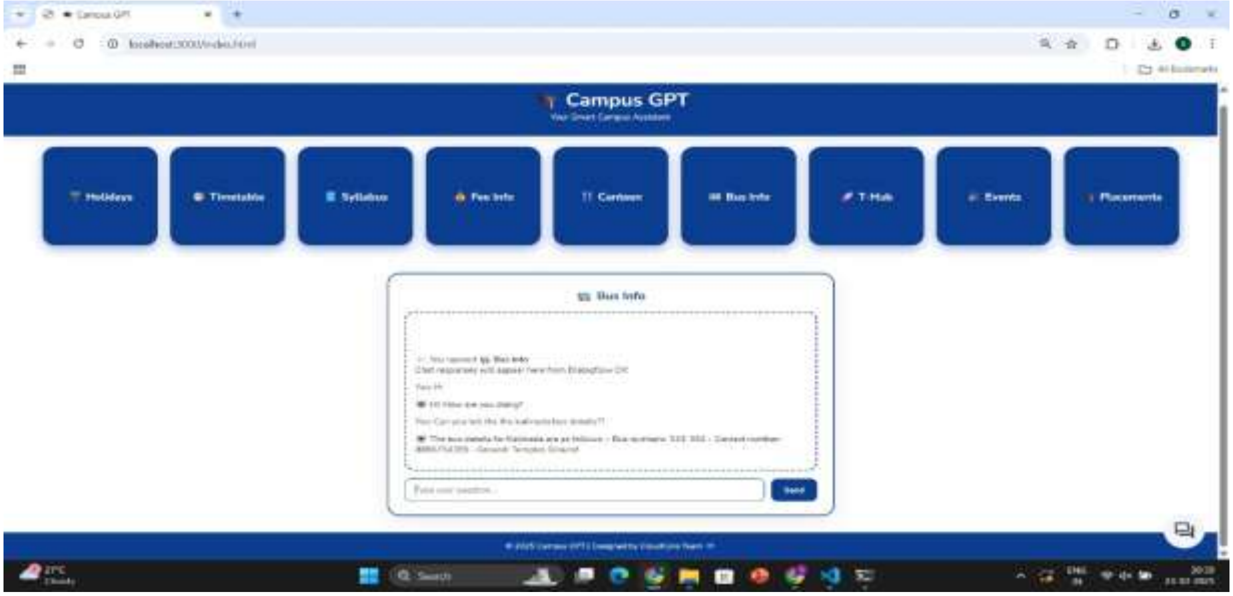
🚀 Why This Project Is Important

- Demonstrates real-world **cloud-based AI system design**
- Shows practical use of **conversational AI and LLM integration**
- Focuses on **security, scalability, and maintainability**
- Designed to be evaluated **without requiring a live deployment**

🔮 Future Enhancements

- Retrieval-Augmented Generation (RAG) using embeddings
- Analytics dashboard for user queries and failures
- Multi-language and voice-based interaction
- Admin interface for updating campus data

📷 Sample Screenshots & Architecture Diagrams



You opened 🚌 Bus Info
Chat responses will appear here from Dialogflow CX.

You: Hi

🤖 Hi! How are you doing?

You: Can you tell me the [illegible] bus details??

🤖 The bus details for [illegible] are as follows: - Bus numbers: [illegible] - Contact number: [illegible] - [illegible]