BIG DATA ARCHITECTURE PROJECT

SafeSpace AI

A Safe Place to Talk, Anytime You Need

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Group Member and Roles

Problem Statement

- Mental health support often lacks personalization and real-time responsiveness.
- Many individuals are left without guidance during critical moments.
- Traditional resources can be overwhelming or hard to navigate.
- This is especially true for those unfamiliar with mental health systems.
- There is a clear need for an intuitive, accessible solution.
- The ideal tool should offer empathetic, adaptive support based on a user’s emotional state and context.

Project Goals

Enable Personalized, Empathetic Interaction:
Use voice-enabled, LLM-powered responses tailored to users' emotional needs.

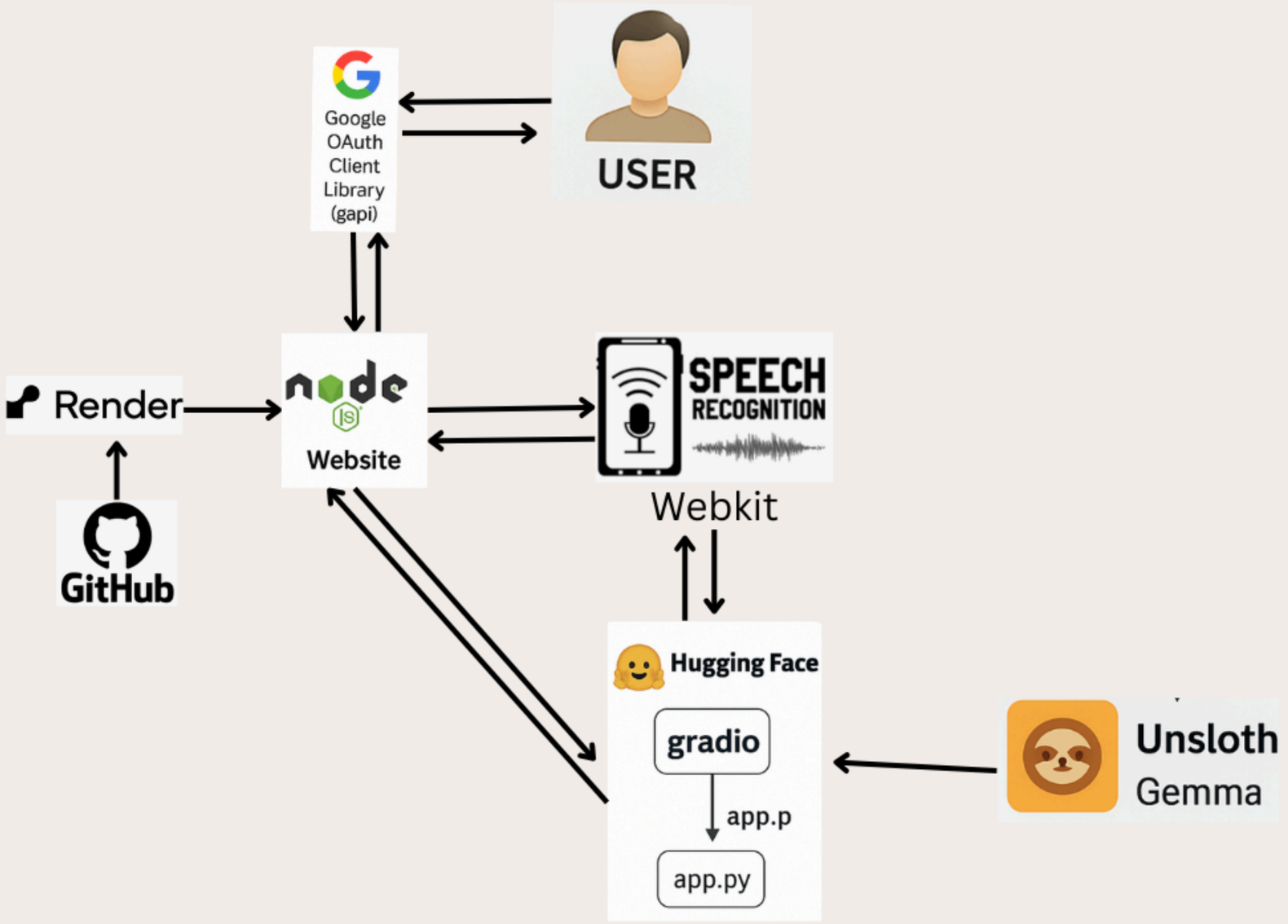
Ensure Scalability & Security:
Build a secure, scalable system using Hugging Face, Render, and future Google Auth.

Improve Accessibility:
Provide 24/7 AI-driven mental health support through a web-based platform.

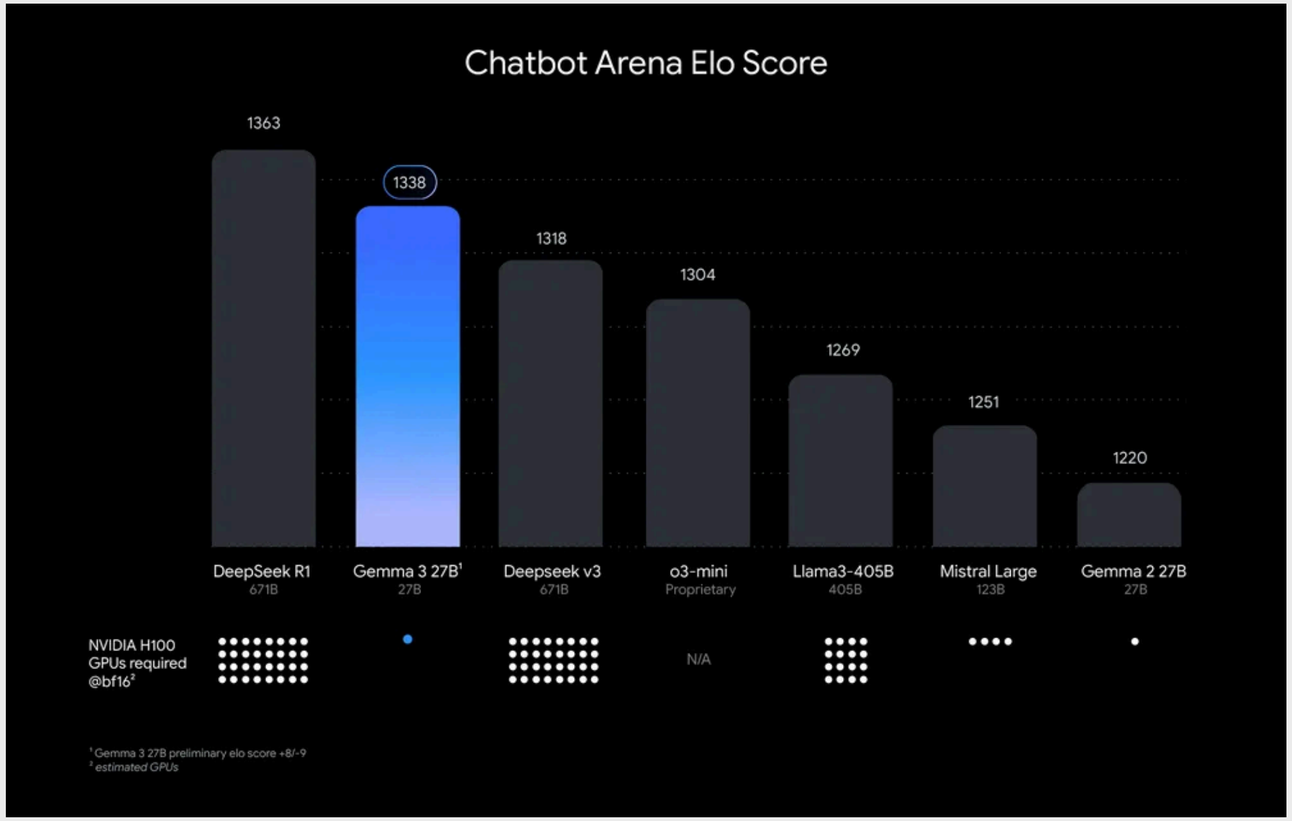
Tech Stack

Libraries

Architecture



Why Gemma 3?



01.

What is Gemma 3?

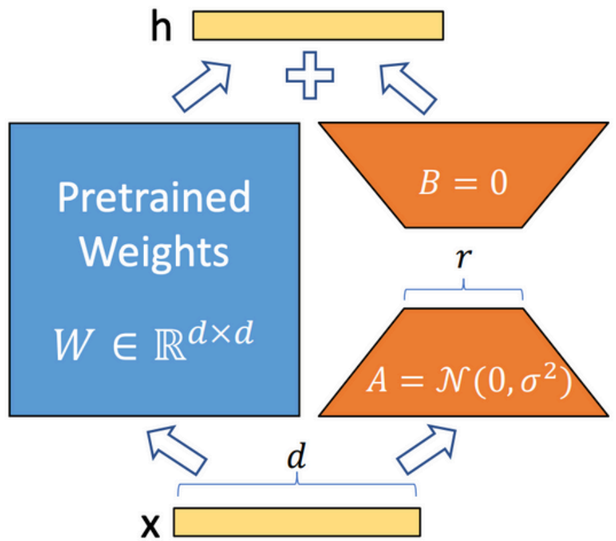
- A state-of-the-art lightweight LLM developed by Google.
- Built for efficiency, safety, and open-source access.
- Optimized for chat-based applications, even on lower compute.

02.

Why We Chose It:

- Smaller size, faster inference — ideal for web deployment.
- High performance on dialogue & instruction-following tasks.
- Seamlessly integrates with Hugging Face Transformers.
- Backed by a growing community and strong documentation.
- Built with responsible AI practices (reinforced safety tuning).

Fine-Tuning Gemma 3 with LoRA



01.

What is LoRA (Low-Rank Adaptation)?

- A lightweight fine-tuning technique that injects small trainable layers into a frozen model.
- Avoids updating the entire model → faster, cheaper, and RAM-efficient.

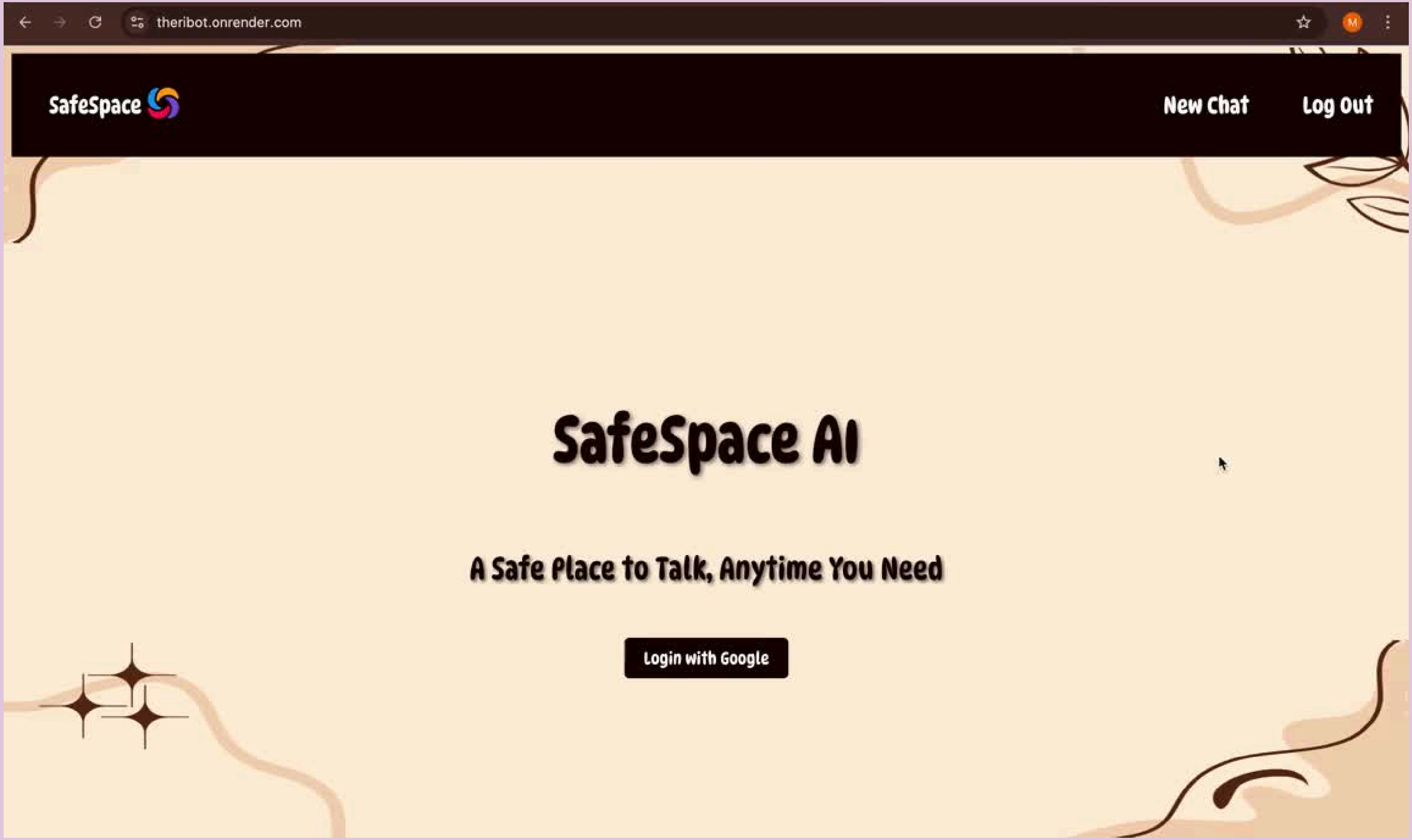
02.

Fine-Tuning Process Overview:

1. Base Model: Used pre-trained Gemma 3 (12B) from Hugging Face.
2. LoRA Layers: Injected into key transformer blocks to capture task-specific knowledge.
3. Custom Dataset: Included sample mental health prompts and empathetic replies.
4. Training Environment: Conducted on Hugging Face notebooks + CPU/GPU runtime.

LETS WATCH SAFESPACE AI IN ACTION

https://theribot.onrender.com/


theribot.onrender.com
SafeSpace
New Chat
Log Out
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Challenges faced

01. Limited Training Support for Gemma on Hugging Face

02. Integration Difficulties Across Tools

03. Deployment & Compatibility Issues

Future Scope

- User Data Dashboard
- Multilingual & Inclusive Design
- Train on more diverse datasets
- Mobile App Development

Our Links

The website for the chatbot is :
https://theribot.onrender.com/

The website for the huggingface space is : https://huggingface.co/spaces/made1570/TestingModelAPI

Github repo:
https://github.com/made1570/Healthbot

Our LLM:
https://huggingface.co/adarsh3601/my_gemma3_pt

References

- Hugging Face: https://huggingface.co
- Gemma LLM by Google: https://ai.google.dev/gemma
- Gradio Framework: https://www.gradio.app
- Render Deployment Platform: https://render.com
- Google Developers Console (OAuth): https://console.developers.google.com
- Web Speech API (MDN Docs): https://developer.mozilla.org/en-US/docs/Web/API/Web_Speech_API
- Keras Documentation: https://keras.io
- GitHub Docs: https://docs.github.com

Thank you very much!