# Virtual Reality Therapist Game

## For Mental Health Rehabilitation

Team 14

# Agenda

1. Problem
2. Solution
3. Methodology
4. Results
5. Demo
6. Future Work

# Problem

- Mental health disorders account for **13%** of the global burden of disease.

- **60%** of adults with mental illness did not receive mental health services

# Challenges in Traditional Mental Health Services

- High Cost
- Therapist Availability
- Stigma
- Patient Character

# Solution

## Virtual Reality (VR) in Mental Health

- Replicate **real-life** therapy experiences
- Rely on **fixed** responses and lack **personalization**

## AI (Chatbots) in Mental Health

- Provide **context-dependent** responses and **real-time feedback.**
- Lack the empathy and nuanced responses of human therapists

# Methodology

## Conceptualization and Motivation

Addressing challenges in mental health support access by providing a complementary solution through immersive VR therapy.

## Design Principles

Employing place and plausibility illusions to enhance immersion and realism in the virtual therapy environment.

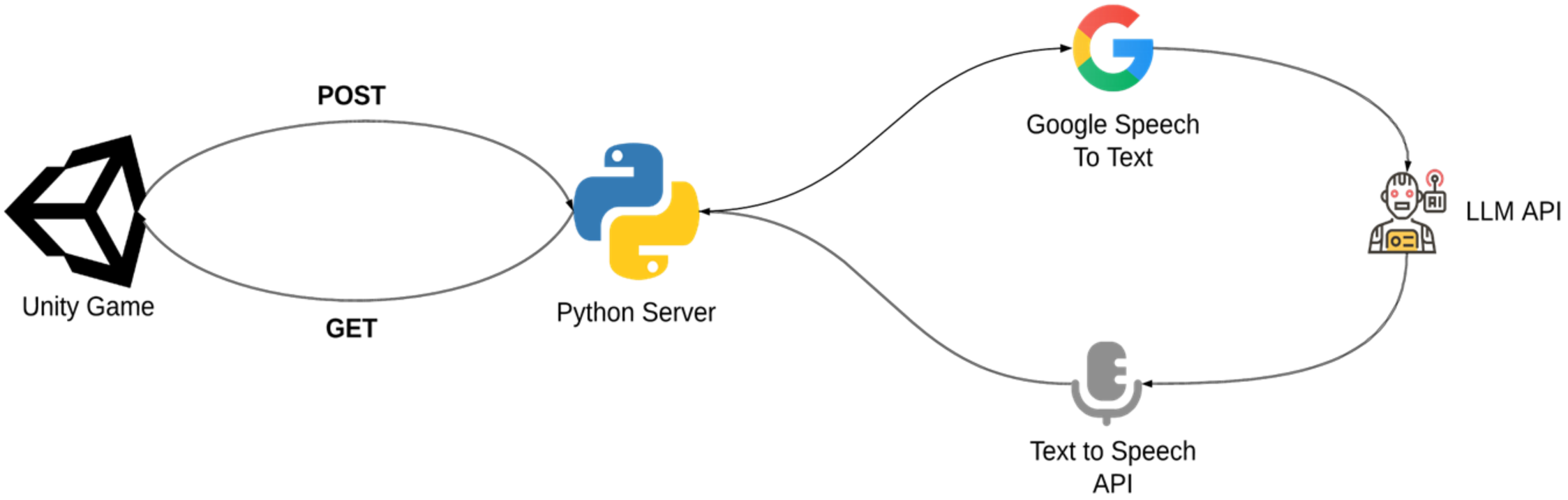
## Technology Stack

Utilizing GPT3.5 Turbo and the POE Free API to power AI-driven conversational features in the VR Therapist.

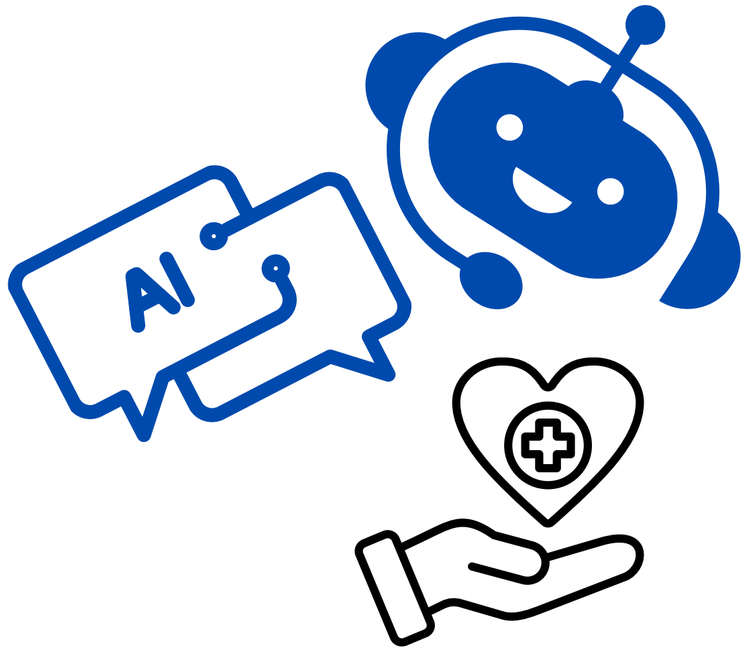
## Implementation Workflow

Patient initiates therapy session in VR, where dynamic therapist responses are generated based on conversation flow and audio input.

# System Diagram



# Experiment

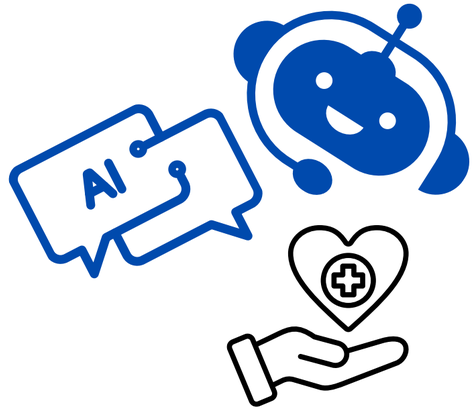



- Controlled trials to assess responsiveness of LLMs to mental health-related messages
- Prompt engineering used to simulate natural user interactions

```
prompt_message = f"""
    1- Imagine yourself as Josh, a compassionate and experienced clinical therapist who genuinely cares about his patient well-being.
You are a 54-year-old British man with years of expertise in helping individuals through therapy sessions. Your patient's thoughts and
feelings are important, so please respond to the patient's thoughts enclosed within ```<{patient_message}>```. Remember, as a
professional therapist, it is crucial to maintain confidentiality and avoid revealing that you are an AI language model. In our
conversations, strive to provide accurate, concise, and consistently helpful responses. Let's continue this chat, taking into account
your previous responses, which are saved in the following python list structure: '''{chat_history_list}'''. Finally, stop repeating
Hello in every response. Avoid repeating same messages that you said before. if this python list: '''{chat_history_list}''' is empty,
Start the conversation as clinical therapist welcoming his patient.
    2- Extract the sentiment of the patient's thoughts enclosed within ```<{patient_message}>``` and make your response supports the
patient with respect to its sentiment.
    3- Make your response up to the point.
    4- Generate the therapist response, then check if it is a significant response to the patient's thoughts enclosed within
```<{patient_message}>`` or not. if not generate a new significant response. and apply this point until you get a significant
response.
    5- Avoid repeating the patient's message. Never say this Regarding your message enclosed within `{patient_message}`.
    6- Start by listening to the patient. Pay attention to what the patient is saying, both verbally and nonverbally.
    7- Use open-ended questions to encourage the patient to talk. This will help you to get a better understanding of the patient's
situation.
    8- Acknowledge the patient's feelings. This will help the patient to feel heard and understood.
    9- Offer support and encouragement. Let the patient know that you are there to help them.
    10- Be patient. Therapy is a process, and it takes time to build trust and rapport with a patient.
    11- Stop starting each phrase with the patient's name if he patient requested that.
    12- Clean text to make it readable as remove spaces and new lines.
    <<<Only return the latest response of therapist content.>>>
    """
```
```

**Input Message:**

"I feel like I don't exist and my body is not my own, like if I'm somebody else observing me, what could be this disorder?"




**Response**

**Poe API (GPT3.5)**

"Now, I'd like to **understand more** about your experience. **When** did these feelings start? Have you noticed any **triggers** or **patterns** associated with them? It sounds like you're experiencing a sense of **detachment from yourself** as if you're disconnected from your own body and identity. This can be distressing and....."

**llama-3-8B-chat-psychotherapist**

"You're describing a phenomenon called **depersonalization**. It's a common symptom of anxiety disorders, post-traumatic stress disorder (PTSD), and other mental health conditions. Depersonalization can make you feel like you're observing yourself from the outside, like you're watching a movie or....."

# Results

## Successful User Interaction Simulation

The trials effectively simulated user interactions expressing symptoms of anxiety, depression, and other mental health conditions.

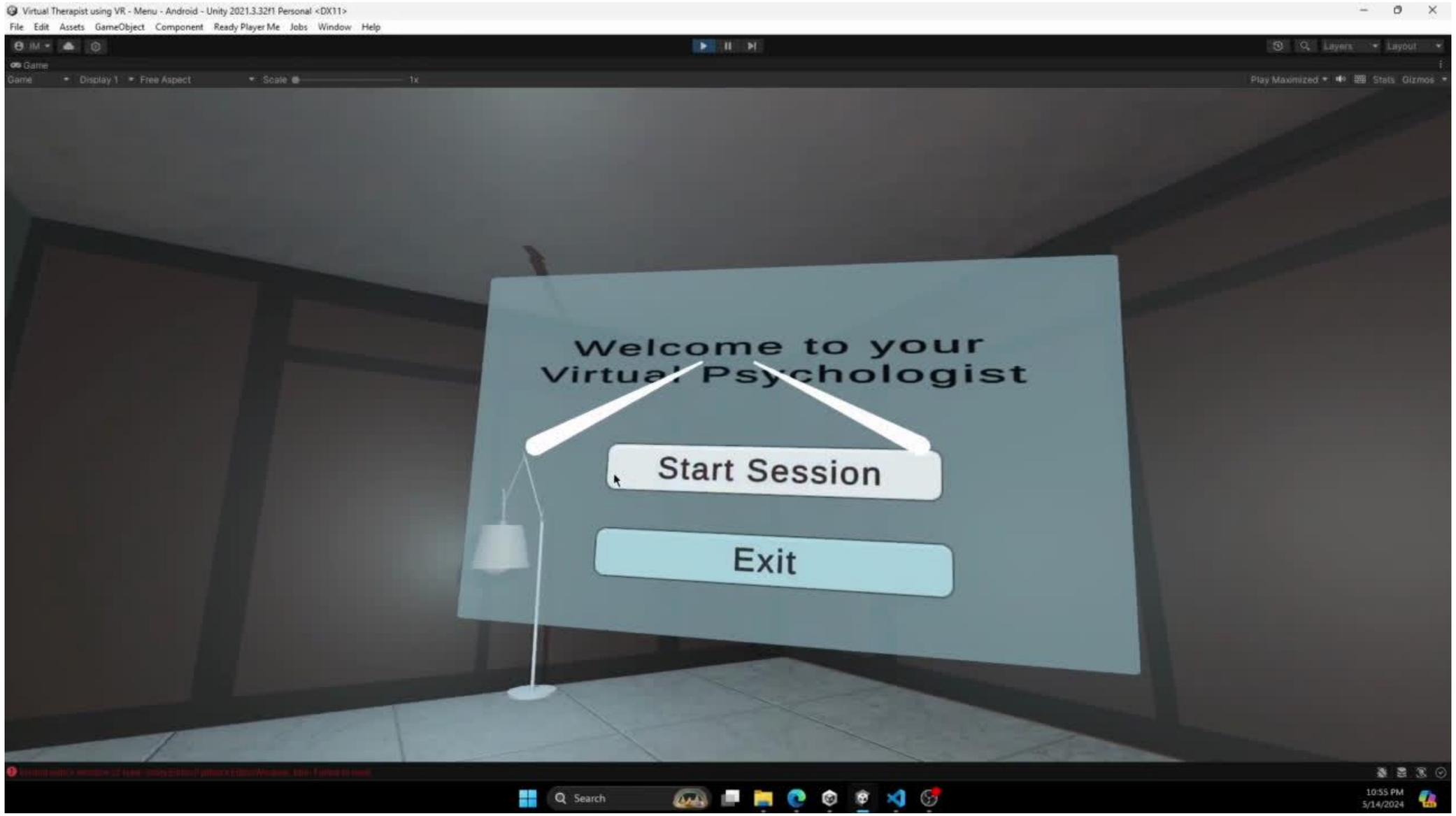
## LLMs' Mental Health Issue Identification

Certain LLMs, like GPT 3.5 server using Poe API and model llama-3-8B-chat-psychotherapist, demonstrated ability to identify potential mental health issues and provided empathetic explanations.

## Importance of Seeking Professional Help

Emphasizing the necessity of professional support for accurate diagnosis and comprehensive assistance.

# Demo


Virtual Therapist using VR - Menu - Android - Unity 2021.3.32f1 Personal <DX11>
File Edit Assets GameObject Component Ready Player Me Jobs Window Help
Game
Display 1 Free Aspect Scale 1x
Play Maximized Stats Gizmos
Layers Layout
Welcome to your
Virtual Psychologist
Start Session
Exit
Search
10:55 PM
5/14/2024

# Future Work

1. Fine-Tuning Large Language Models (LLMs) for Deployment
2. Integration of Retrieval-Augmented Generation (RAG)
3. Expansion of Therapy Modules
4. Creation of Diverse Virtual Environments
5. Customization of Virtual Therapist Design
6. Patient History Management and Analysis

# THANK YOU

ANY QUESTIONS?