

M2 VAR

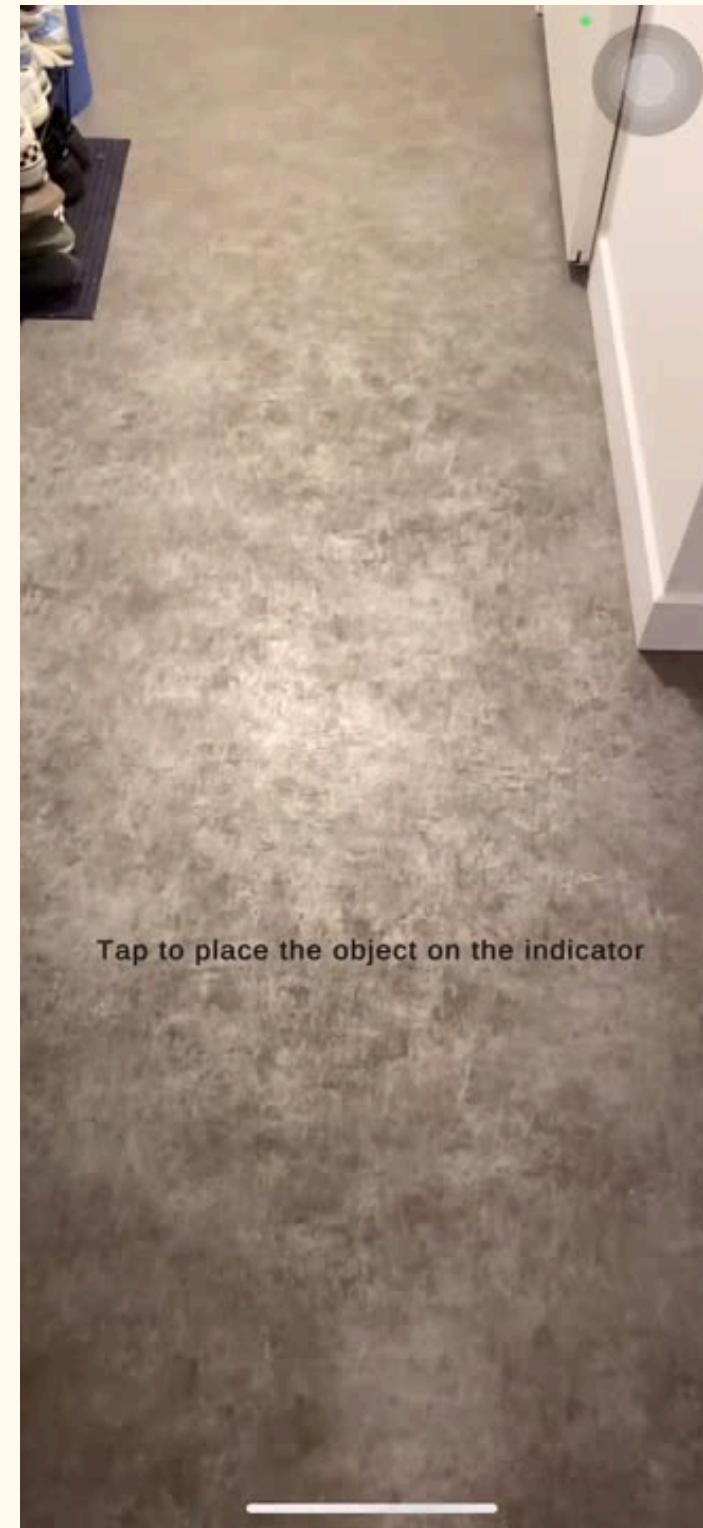
# Transversal Project

31.01.2025

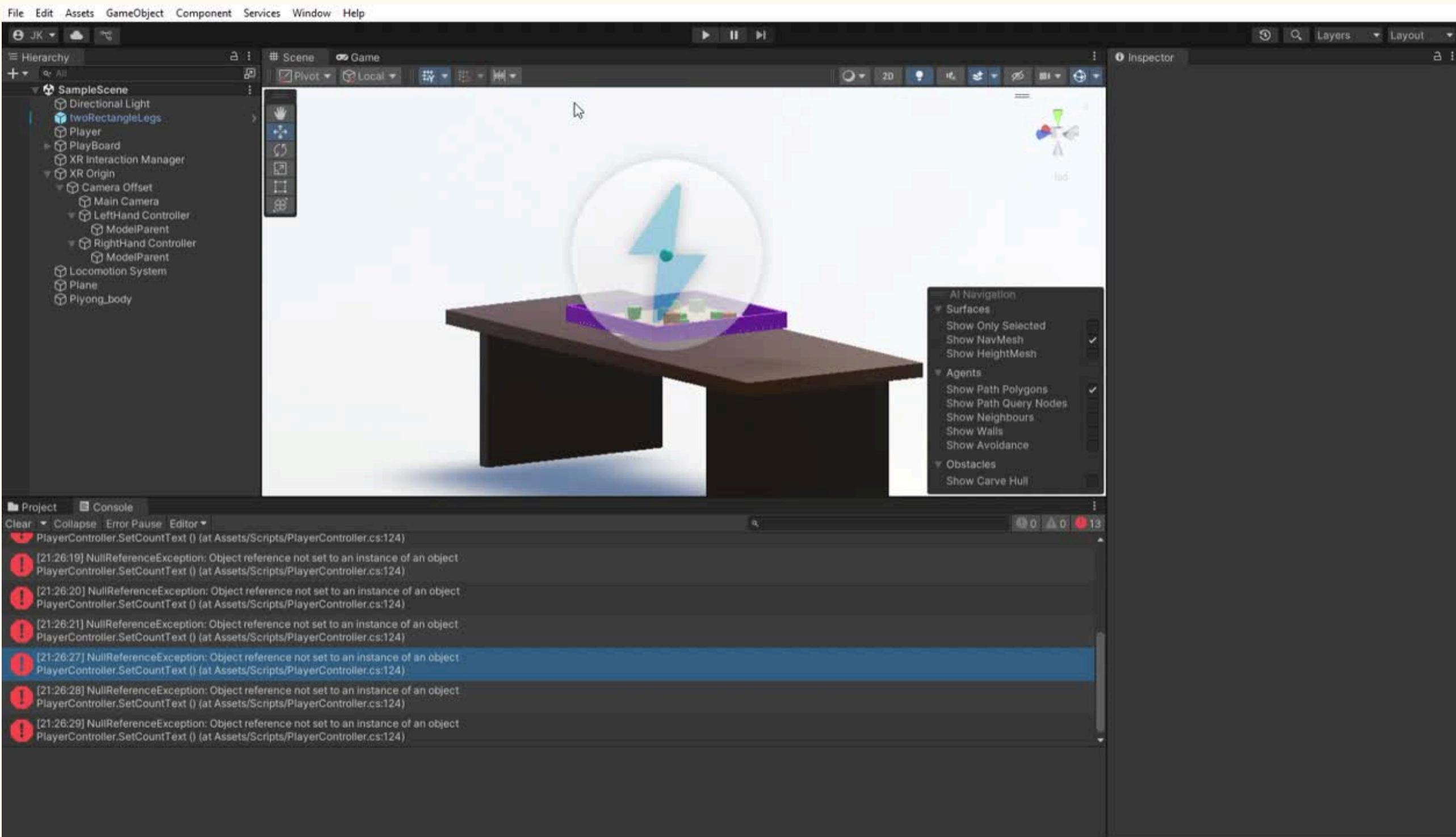
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# Tap to Place



# VR - Roll a ball



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# 01 Introduction

## Gamified VR for Mental Health

- Create a VR based gamified therapy environment to promote positive emotional regulation.
- To provide users with small, rewarding tasks in a virtual environment that indirectly encourages healthy routines

## Why we chose this topic

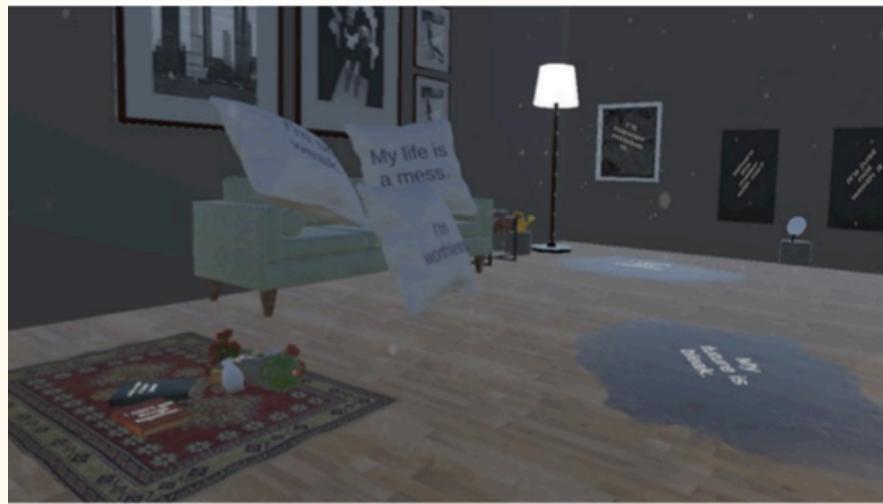
- Challenge accessing traditional treatments due to long wait times, high costs, and some stigma
- Mental health issues are a growing concern globally across different age groups

That's why we chose VR-based gamified therapy  
**Accessible, Engaging, Low-pressure alternative**

## 02 Background Research

### Mind Mansion

- Mind Mansion is a VR experience that places users in a virtual, cluttered apartment.
- Users clean and organize items that symbolize negative thoughts, helping them manage and process these emotions physically.



(a) Before Interaction

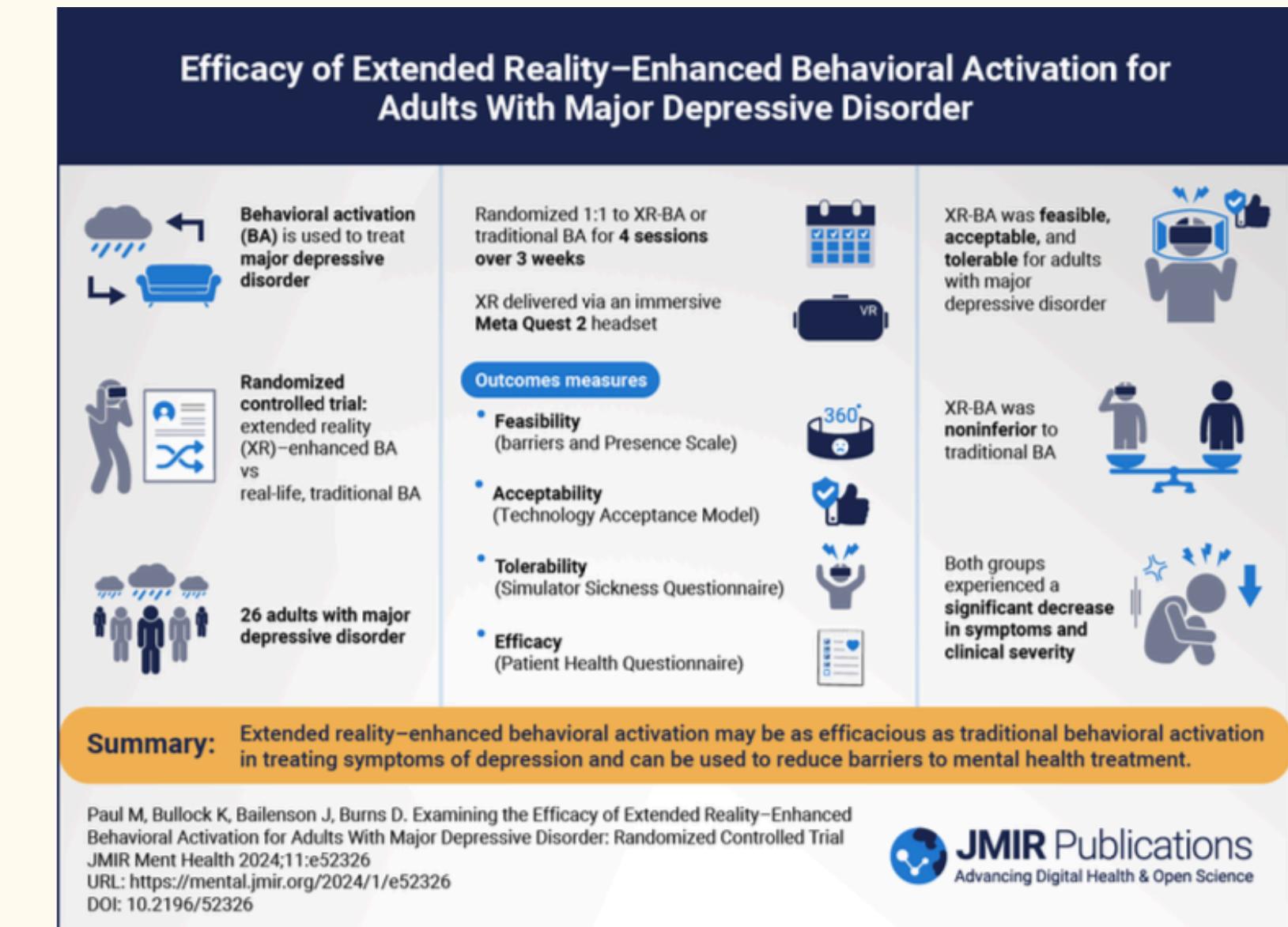


(b) After Interaction

## 02 Background Research

### VR Behavioral Activation (VRBA)

- VRBA is a study that explores whether using extended reality can help treat major depressive disorder.
- This study suggests that behavioral activation using AR may improve accessibility in mental health treatment and be effective in alleviating depressive symptoms.



# RESEARCH PAPERS & MENTAL HEALTH CONNECTION

The goal of this project is to create a relaxing and therapeutic virtual environment that promotes well-being.

The following research papers provide insight into how serious games can positively impact mental health:

## Review

### Therapeutic use of serious games in mental health: scoping review

Alice Dewhirst, Richard Laugharne and Rohit Shankar

#### Background

There has been an increase in the development and application

quality varied, with studies rated high ( $n = 3$ ), moderate ( $n = 6$ ), low ( $n = 3$ ) and very low ( $n = 2$ ).

- Serious games can be used for therapy, reducing symptoms of anxiety and depression.
- Gamification techniques enhance user engagement and encourage long-term participation.
- Customizable virtual environments allow users to experience relaxation and control over their surroundings.

JMIR SERIOUS GAMES

Kowal et al

#### Viewpoint

### Gaming Your Mental Health: A Narrative Review on Mitigating Symptoms of Depression and Anxiety Using Commercial Video Games

Magdalena Kowal, BSc, MSc; Eoin Conroy, BSc, MSc; Niall Ramsbottom, BSc, MSc; Tim Smithies, BSc; Adam Toth, BSc, PhD; Mark Campbell, BA, GDip, PhD

- Digital games provide a structured, interactive method for mental health support.
- Evidence suggests that cognitive behavioral therapy (CBT) can be integrated into game mechanics for self-guided therapy.
- User engagement and motivation are critical factors for therapeutic success.

## 03 Project concept

### Gamified VR Therapy for mental health

- VR therapy environment in a peaceful forest cabin
- Users can engage in simple but meaningful activities to promote self-care, stress relief, and positive emotional regulation.
- Combining game elements, relaxing interactions, and goal-setting features to deliver a non-pressured therapeutic experience.

## 3.1 Universe

Forest & Cabin



Cabin Interior



- Cozy peaceful cabin located in a tranquil forest.
- Sounds of birds and wind
- Decorations that evolve based on user progress

# VIRTUAL PET



## Overview

The virtual pet is an essential component of the project, designed to enhance the user's emotional engagement and provide a sense of companionship within the virtual environment.



# PET DEVELOPMENT PROCESS

01

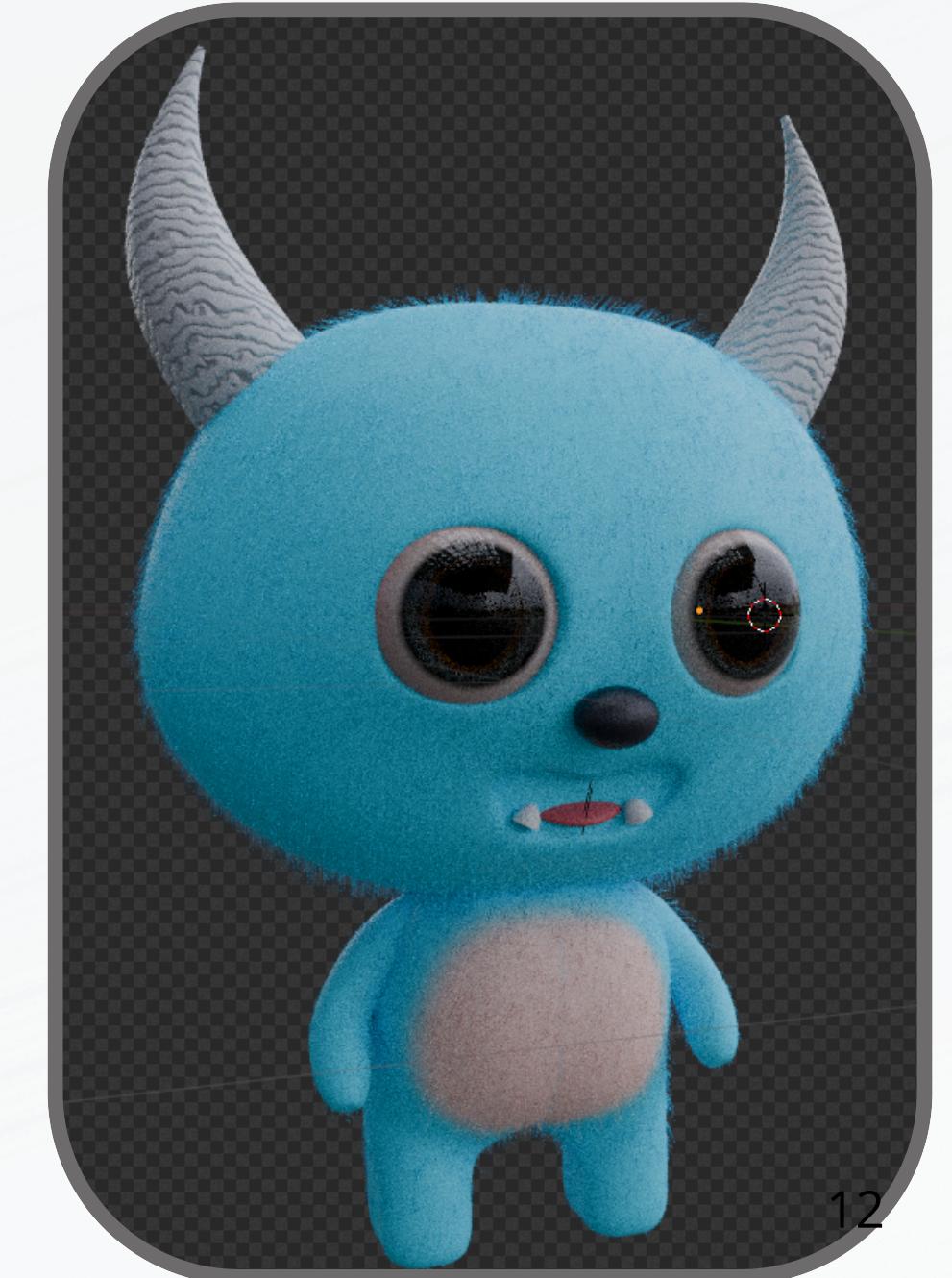
## Modeling & Texturing in Blender

- **Choice of Animal:** Decided on a pet that aligns with a relaxing and supportive environment
- **3D Modeling:**
  - Created the pet's base mesh using Blender.
  - Sculpted details to give it a natural and appealing look.
- **Texturing:**
  - Applied realistic textures to simulate fur and skin.

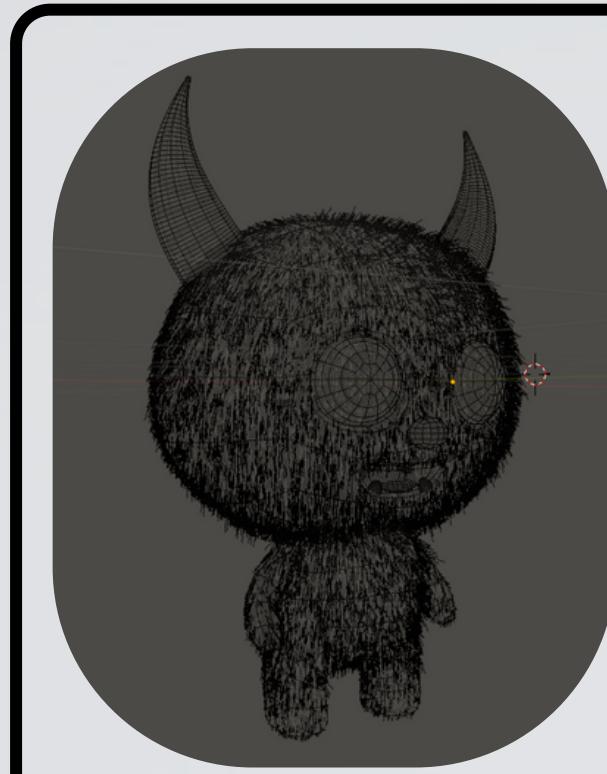
02

## Integration into Unity

- **Importing the Model:**
  - Exported the Blender model as an FBX file and imported it into Unity.
  - Adjusted materials and shaders to match Unity's rendering pipeline.
- **Animation:**
  - Implemented basic animations such as idle, walking, and playing.



# VIRTUAL PET



Wireframe



Solid



Material Preview



Rendered

### 3.3 Personalization & Goal setting

## Today's Goal

➤ Input your goal:

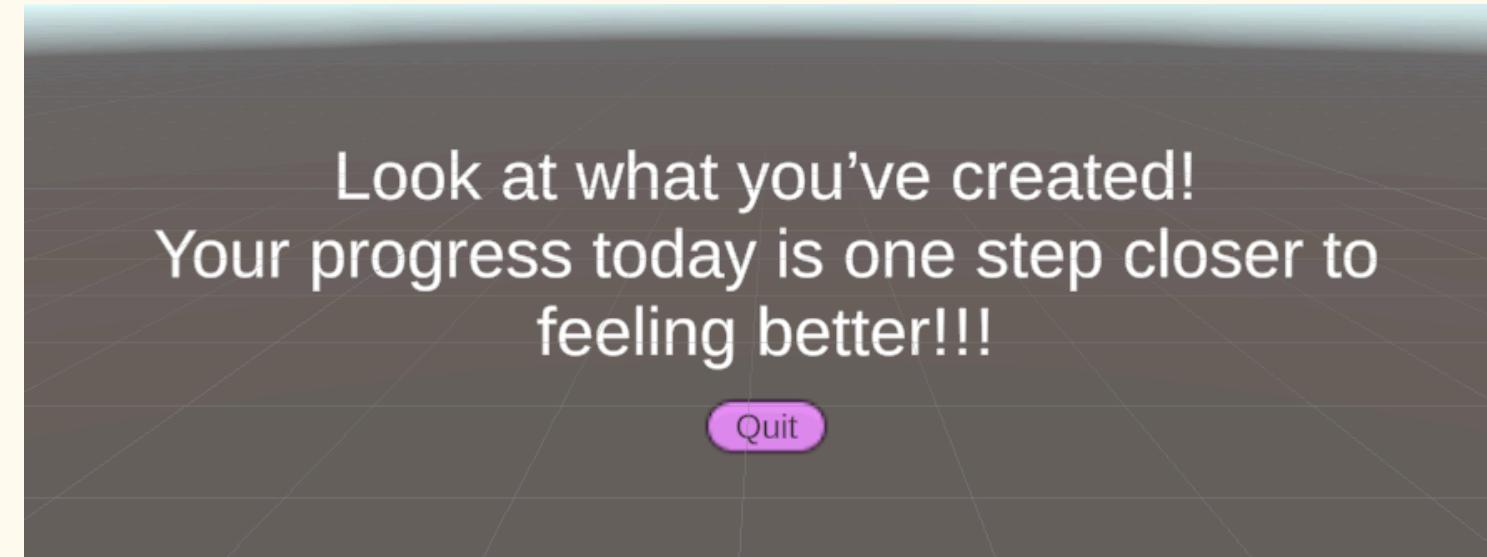
Add Goal

- 1. Take a 5-minute walk Complete
- 2. Drink a glass of water Complete

Progress: 50%

## 3.4 Therapeutic Mini-Games

### Puzzle Game



#### How it works

1. Grab the box on the table using the VR controller.
2. Flip the box to spill out the puzzle pieces.
3. Grab each puzzle piece with the controller and place it in the correct location on the table.
4. Once the puzzle is complete, users receive a visual reward and encouraging feedback.



# LEAF CATCHER VR GAME

The Leaf Catcher VR game is designed as a relaxing, interactive experience where players use baskets in each hand to catch falling leaves. The game encourages mindfulness and engagement through simple yet enjoyable mechanics.

**3D Modeling in  
Blender**

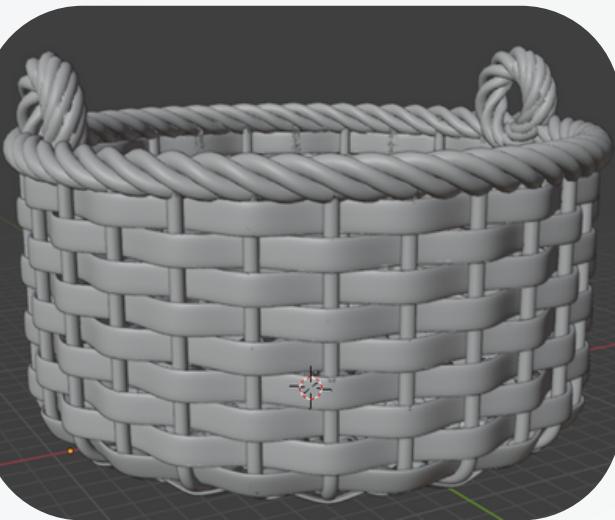
**Implementation  
in Unity**

**VR Integration**

# 3D MODELING IN BLENDER

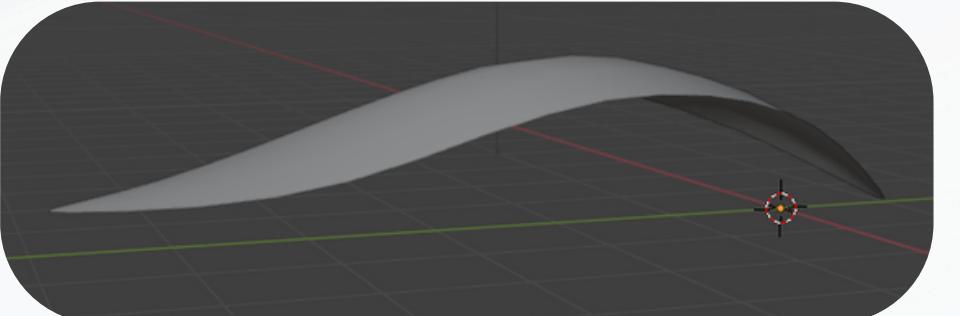
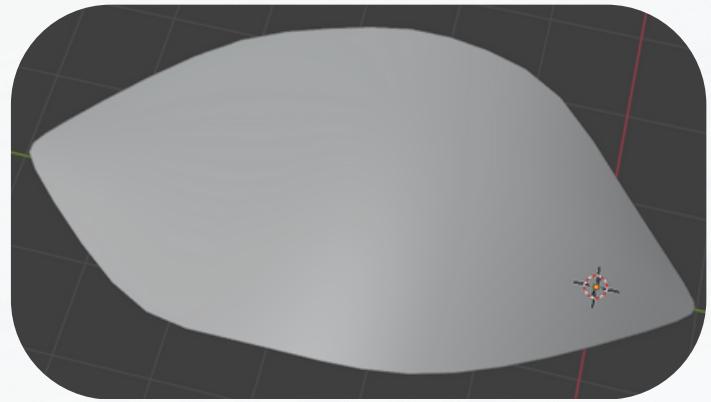
## 01 Basket Model:

- Created detailed 3D models of baskets with realistic proportions.
- Applied appropriate textures to enhance realism.



## 02 Leaves:

- Modeled multiple leaf types with different shapes and fall behaviors.
- Added slight variations in color and texture to increase visual appeal.



# IMPLEMENTATION IN UNITY & VR INTEGRATION

## 01 Game Mechanics:

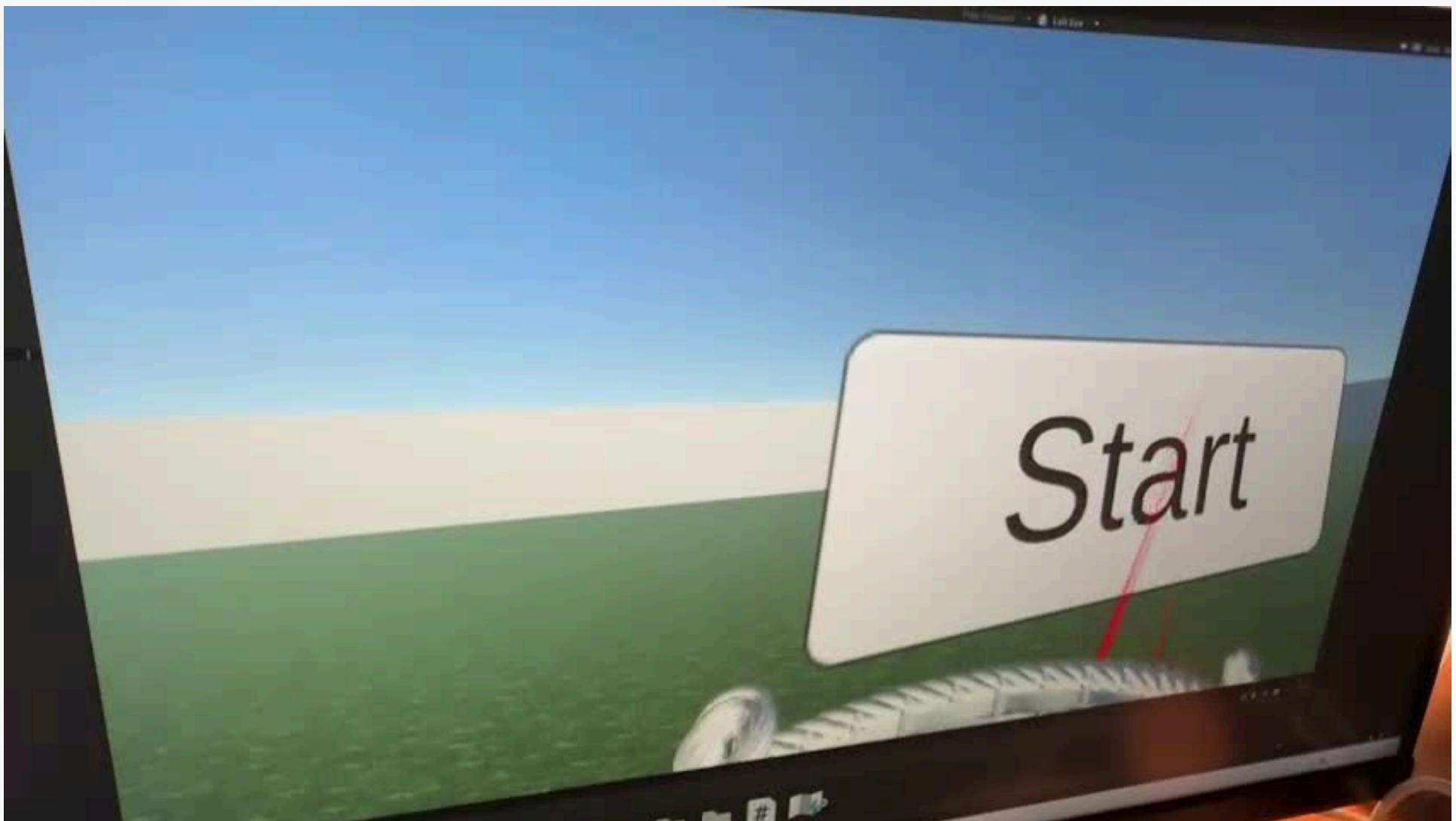
- Designed physics-based falling leaves.
- Programmed basket movement controlled by VR hand controllers.
- Added collision detection for successful leaf catches.

## 02 UI & Feedback System:

- Implemented an intuitive UI displaying score and feedback.

## 03 VR Integration:

- Configured controls for smooth player interaction.
- Adjusted field of view and user comfort settings.

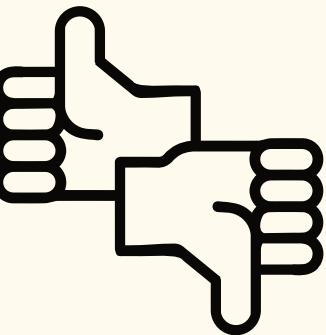


## 04 Key Features of this VR App



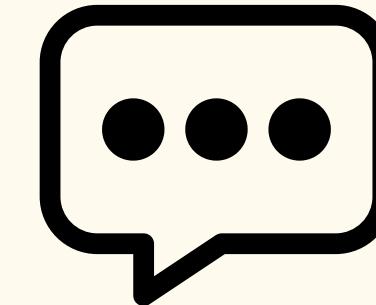
### Personalized Goals

Users set goals and achieve them through small steps



### Non-Punitive

No negative feedback if you fail to complete a task



### Dynamic Feedback

Changes in pet immediately reflected based on activity

## 05 Result and issues

### VR Game Interaction Issues

- Problem: Difficulty with VR gesture tracking and object placement
- Planned Solution: Improving VR controller input accuracy

### Virtual Pet Emotional Responses

- Problem: The virtual pet does not yet reflect user actions through changes in behavior, such as facial expressions or mood-dependent actions.
- Planned Solution: Implement a emotional system where the pet's behavior dynamically update based on user interactions.

**Thank you  
Feel free to ask questions!**