



Exploring the Effect of Personalized Virtual Reality

Serious Game for Stroke Rehabilitation

RVA 2025/2026 - Midterm Presentation

Ana Rita Guimarães – 124362

David Palricas – 108780

INTRODUCTION (1/2)

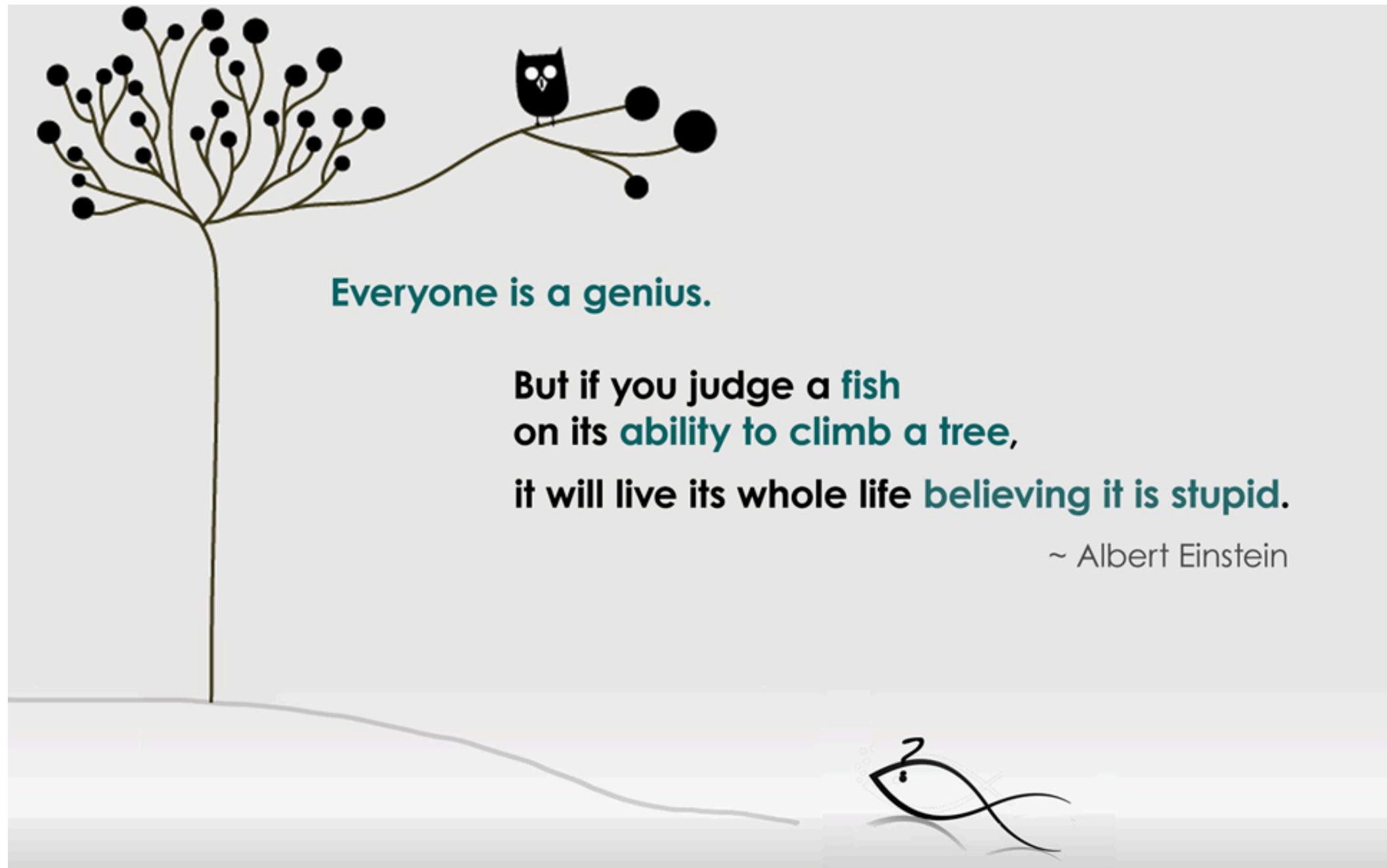
Why this Project?

- How does **stroke** impacts our society?
- Why **VR** for rehabilitation?



INTRODUCTION (2/2)

What is Personalization?



VISION

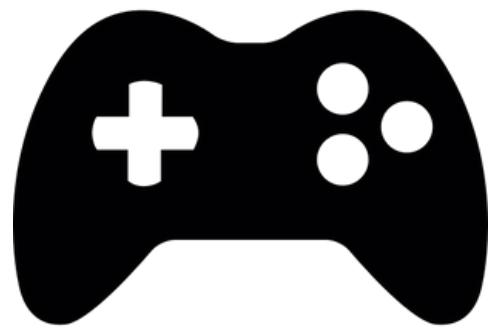


A functional VR prototype developed for rehabilitation

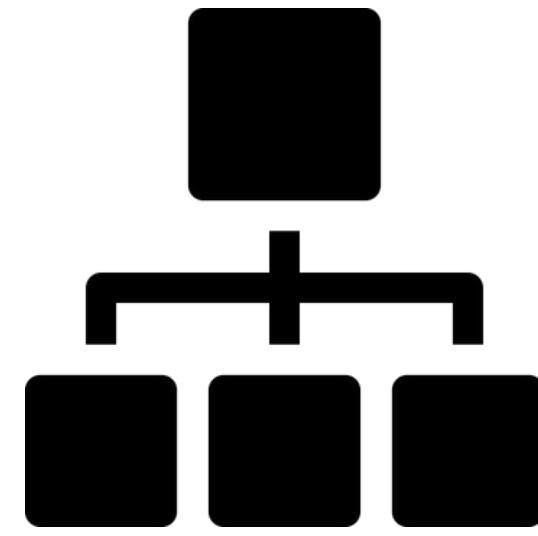
A new, more motivating and enjoyable form of rehabilitation

Prove the Usability & Effectiveness in VR Rehab

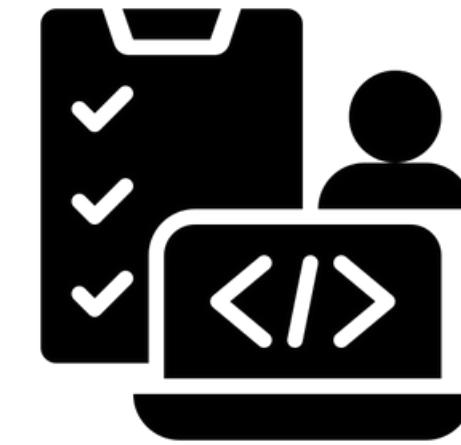
OBJECTIVES



Create at least 2 VR games



Create the personalisation's structure



Test with users

BENEFITS



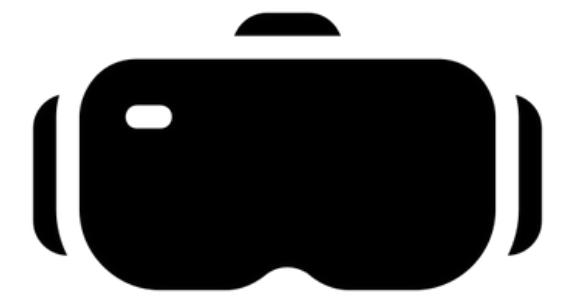
Increase survivors' motivation



Improves survivors' progress

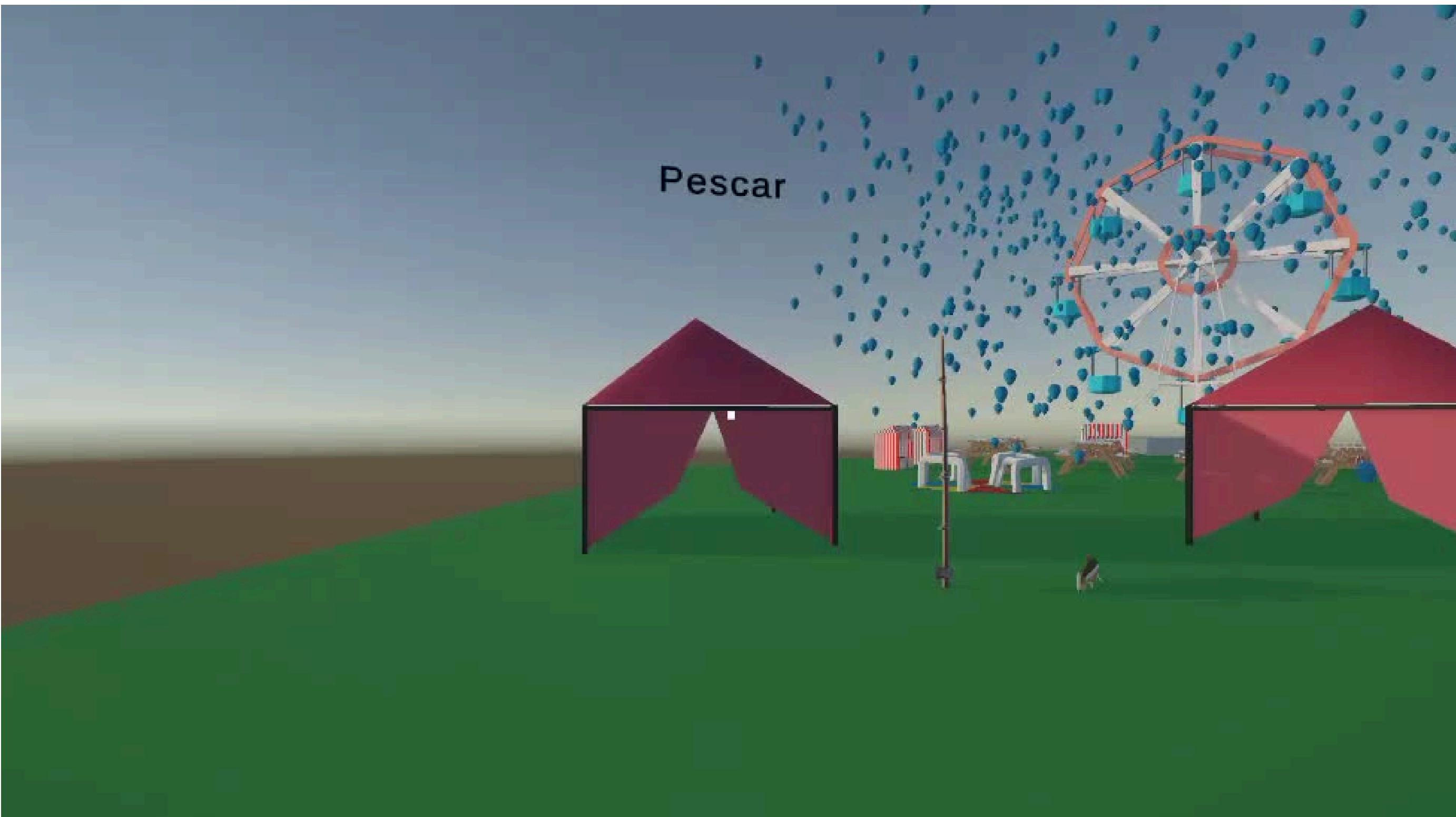


Better progress tracking for healthcare professionals



Contribute to VR Rehabilitation Research

PROJECT ENVIRONMENT



GAMES CONCEPT(1/2)

- Why is relevant for stroke rehabilitation?
- How it can be personalized?



GAMES CONCEPT(2/2)

- Why is relevant for stroke rehabilitation?
- How it can be personalized?



PERSONAS



Manuel

- 72 years old
- Plumber
- 40 years of experience
- Retired

Challenges

Problems: Partial paralysis in his left arm

Fears: Not moving your arm like before again or getting worse

Concerns: Difficulty adapting to new technologies

Desires: Improve left arm movement and coordination

Relation with Technology

- No prior experience with V.R.
- Dream V.R. is something simple and easy to use

PERSONAS



Maria

- 30 years old
- Physiotherapist
- Specialized in Stroke Rehabilitation
- 5 years of experience

Challenges

Problems: Having to explain to survivors how to use technology

Concerns: Survivors not adapting to new technologies

Desires: Wants patients to improve their abilities and to feel more motivated.

Relation with Technology

- Some experience with V.R. technologies
- Sees V.R. as a valuable tool for rehabilitation

USER STORIES

Manuel

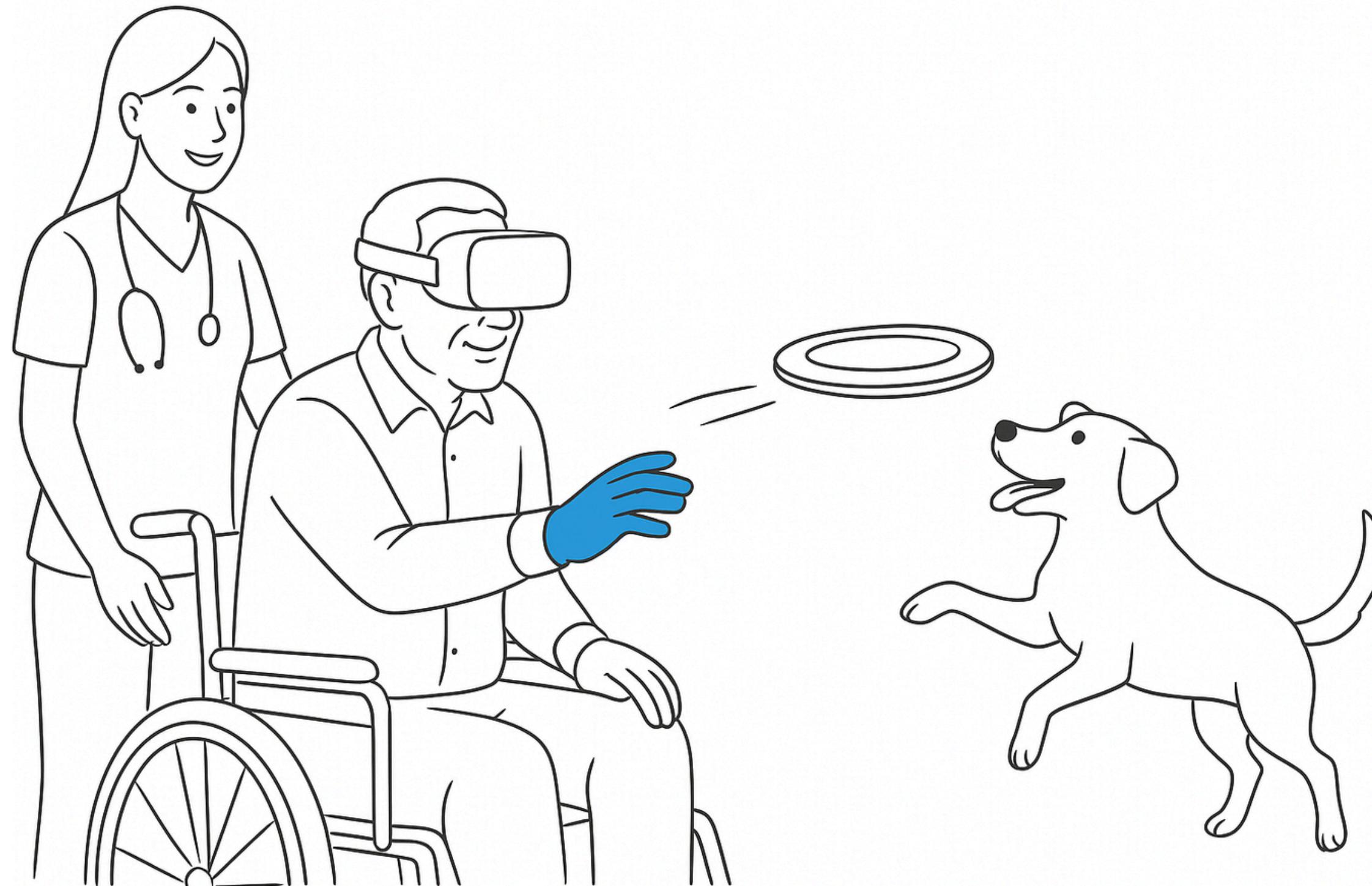
As a **stroke survivor**, I want to **engage in enjoyable and motivating activities** so that **I can stay committed to my rehabilitation process.**

Maria

As a **healthcare professional**, I want to **monitor my patients' progress in real time** so that **I can make informed adjustments to their therapy plans.**

STORYBOARDS

Frisbee



STORYBOARDS

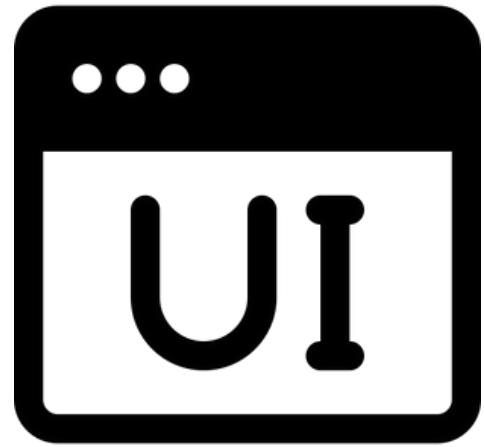
Archery



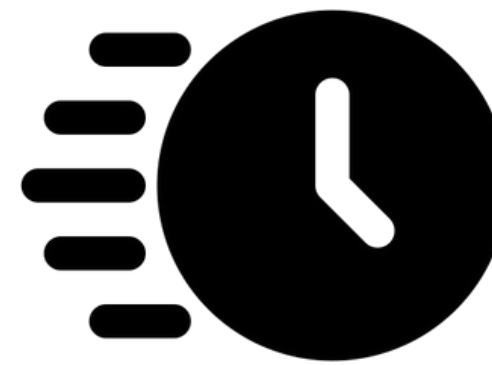
QUALITY REQUIREMENTS



Accessibility



Intuitive UI

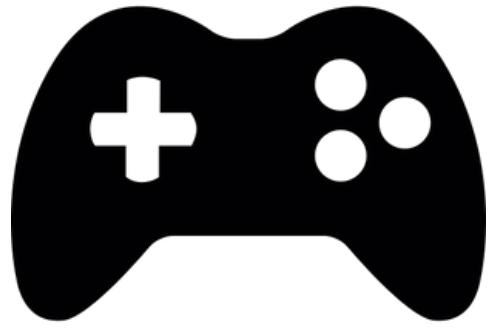


Low latency



**Keep users engaged
and motivated**

FUNCTIONAL REQUIREMENTS



Simple mechanics



Clear goals and instructions



Quick feedback



Gamification for motivation and engagement

PROJECT CONSTRAINTS

1.

Time

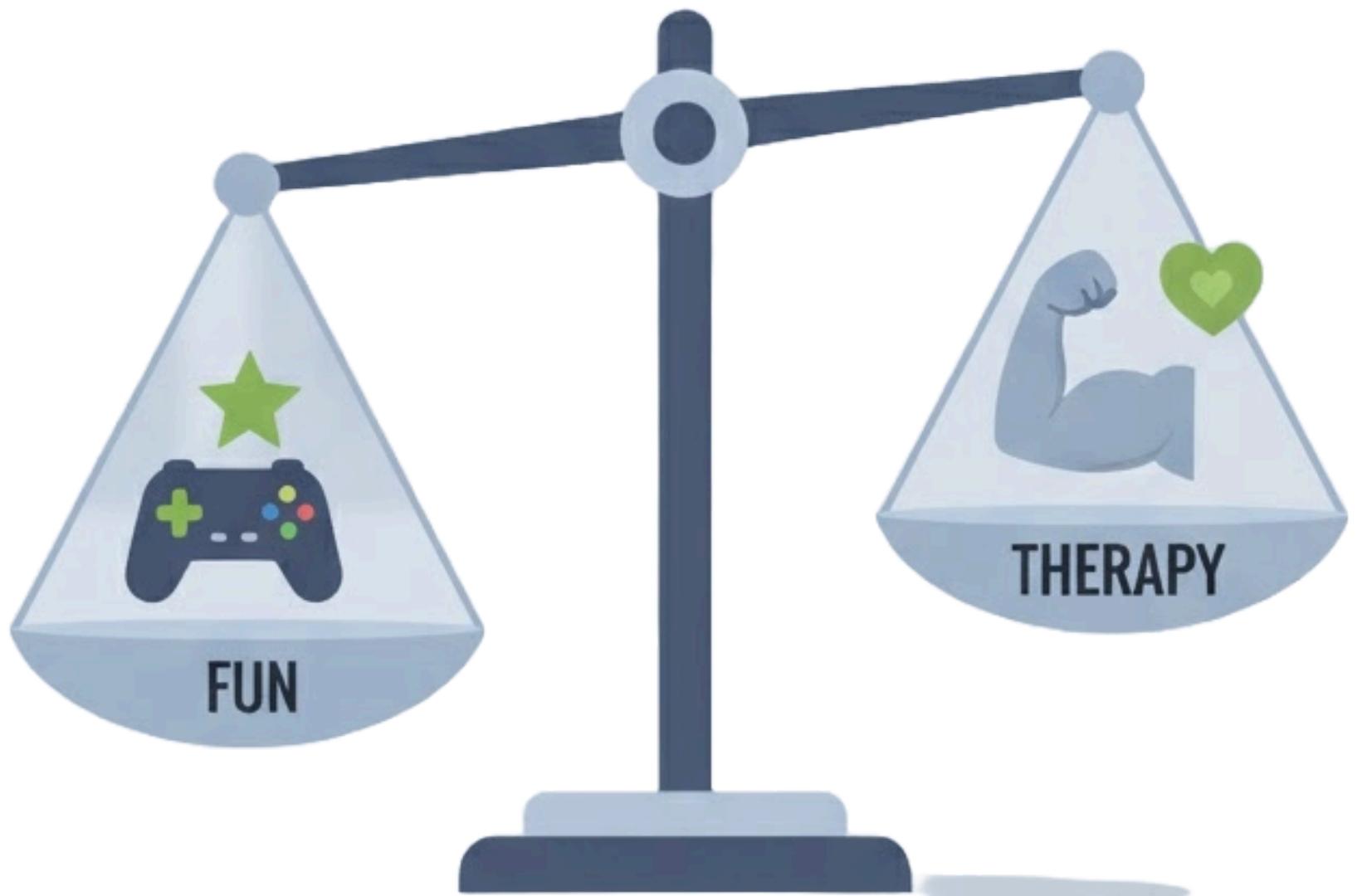
2.

Feedback

3.

Accessibility

GREATEST CHALLENGES



NEXT STEPS

- 1. Analysis and learning of VR Technologies and Tools**
- 2. Literature Review**
- 3. Refinement of Game Concepts**
- 4. VR Prototype Planning and Development**

REFERENCES

- **Figueiredo, I. et al. (2025). Personalized Virtual Reality for Stroke Recovery. ISMAR 2025, University of Aveiro.**
- **Mahlovanyy, A. et al. (2023). Physical Rehabilitation and Archery Exercises in Paralympic Athletes. Rehabilitation & Recreation, 15, 16–23.**

The End

Thank You For Listening