

# Dissertação

## Exploring the Effect of Personalized Virtual Reality Serious Game for Stroke Rehabilitation

**Orientador:** Bernardo Marques [bernardo.marques@ua.pt](mailto:bernardo.marques@ua.pt)

**Co-orientador:** Beatriz Sousa Santos [bss@ua.pt](mailto:bss@ua.pt)

### Enquadramento e objetivos:

Stroke is a leading cause of disability worldwide with an increasing number of survivors with motor, psychological, cognitive, and social handicaps. Despite their important role, conventional rehabilitation methods often struggle to maintain motivation due to their repetitive nature, leading to potential social and mental health repercussions.

To help overcome some of these challenges, Virtual Reality (VR) technologies offer promising benefits by immersing stroke survivors in dynamic, multi-sensory environments that replicate real-life scenarios. Exploring VR solutions as a complementary approach to traditional therapy has the potential to boost motivation and engagement during rehabilitation routines, enabling to prolong their treatment over extended periods.

This work proposes the use of personalized VR serious games, following insights collected through a Human-Centered Design (HCD) methodology with a multidisciplinary team from the Rovisco Pais Rehabilitation Center. In particular, it will focus on being able to adjust different aspects of the game according to pre-established rules (e.g., duration of a task, if a stroke survivor achieves the intended goals, etc.). By doing so we aim to understand their impact on motivation, engagement, and overall therapeutic outcomes.



### Descrição faseada do trabalho (plano de trabalho)

- Review of the state of the art;
- Problem characterization, requirement definition and proposal of game narrative;
- Iterative development and testing of the serious game;
- User Study with participants, e.g., stroke survivors and healthcare professionals;
- Write documentation of the work carried out (dissertation).

### Observações

The work will take place at IEETA, in particular in the VAR Laboratory. Visits will be made to the Rovisco Pais Rehabilitation Center during the course of the dissertation, whenever necessary.

<https://sites.google.com/view/varlab/home>