



INSTITUT
POLYTECHNIQUE
DE PARIS

s@movar

VRTEG – VIRTUAL REALITY INTERFACE EVALUATION

DESIGN AND EVALUATE HYBRID VR INTERFACES IN REAL-
LIFE USES-CASES



HYBRID VR INTERFACE

VR / EYE-TRACKING / ELECTROENCEPHALOGRAM



HTC Vive Pro Eye
Integrated Tobii eye-tracker



g.Tec Unicorn Hybrid Black
Non invasive EEG

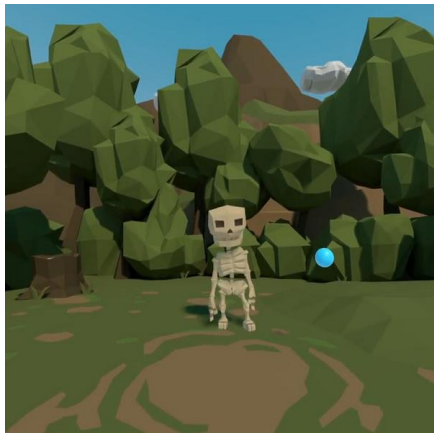


Unity 2020.3.1f1 LTS
3D simulation, digital twin,
interactions and VR in one
game engine

DEVELOPED PROTOTYPES

VISUAL DYSLEXIA THERAPY

- Dys&Dragon, prototype of a gamified VR multimodal rehabilitation app.
- Based on eye-tracked visual exercises.
- Publication: Saunier, Lea, et al. "Visual Rehabilitation for Learning Disorders in Virtual Reality: Visual Rehabilitation for Learning Disorder in VR." *Proceedings of the 27th International Conference on 3D Web Technology*. 2022.



Visual Exercise



Ecological Exercise

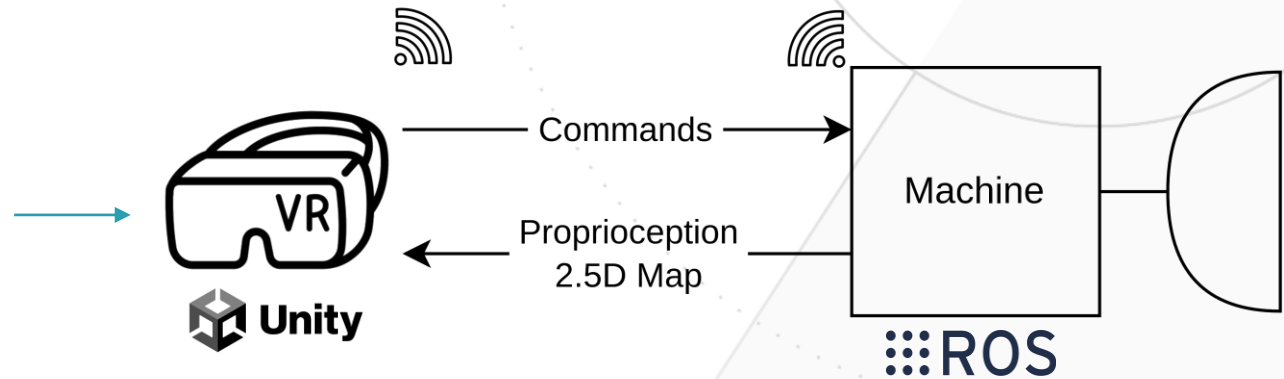
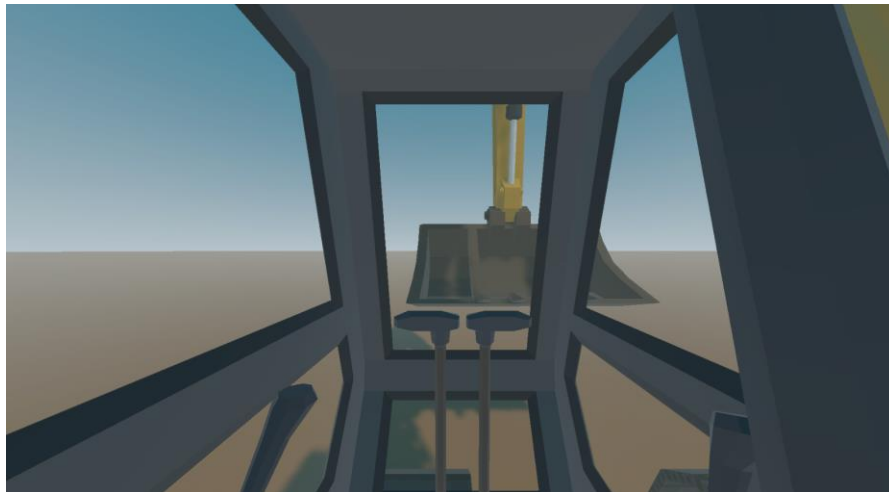
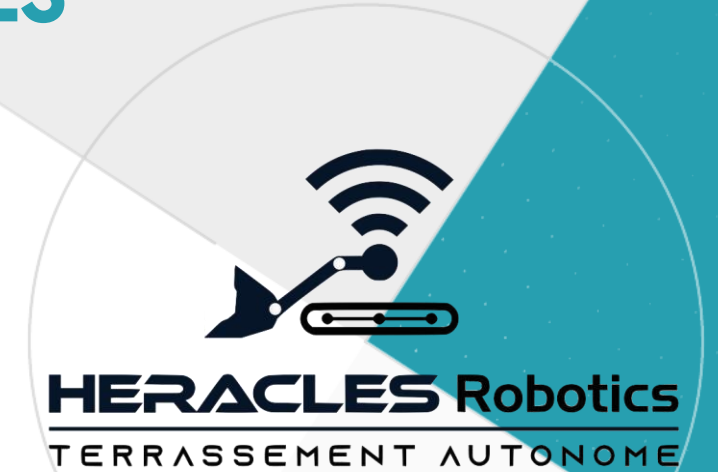


Reading Exercise

DEVELOPED PROTOTYPES

EARTHWORK TELEOPERATION

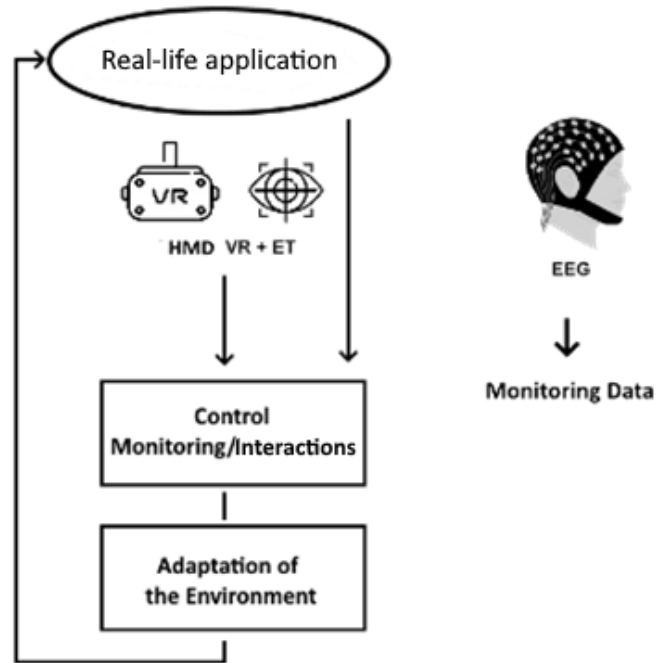
- Working with HERACLES Robotics to develop a remote control VR interface.
- Control loop with Unity digital twin VR visualisation and ROS controlled machine.



Control Loop

FUTURE WORKS

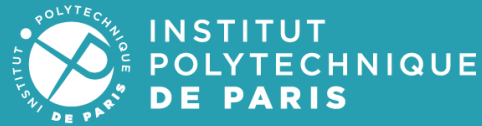
EEG INTEGRATION



Main evolution goal > fully combine:

- Eye-tracking active interactions;
- Eye-tracking passive analysis;
- EEG passive analysis.

Continue developping the application with user feedback and EEG: cognitive load, stress level, brainwave topography.



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