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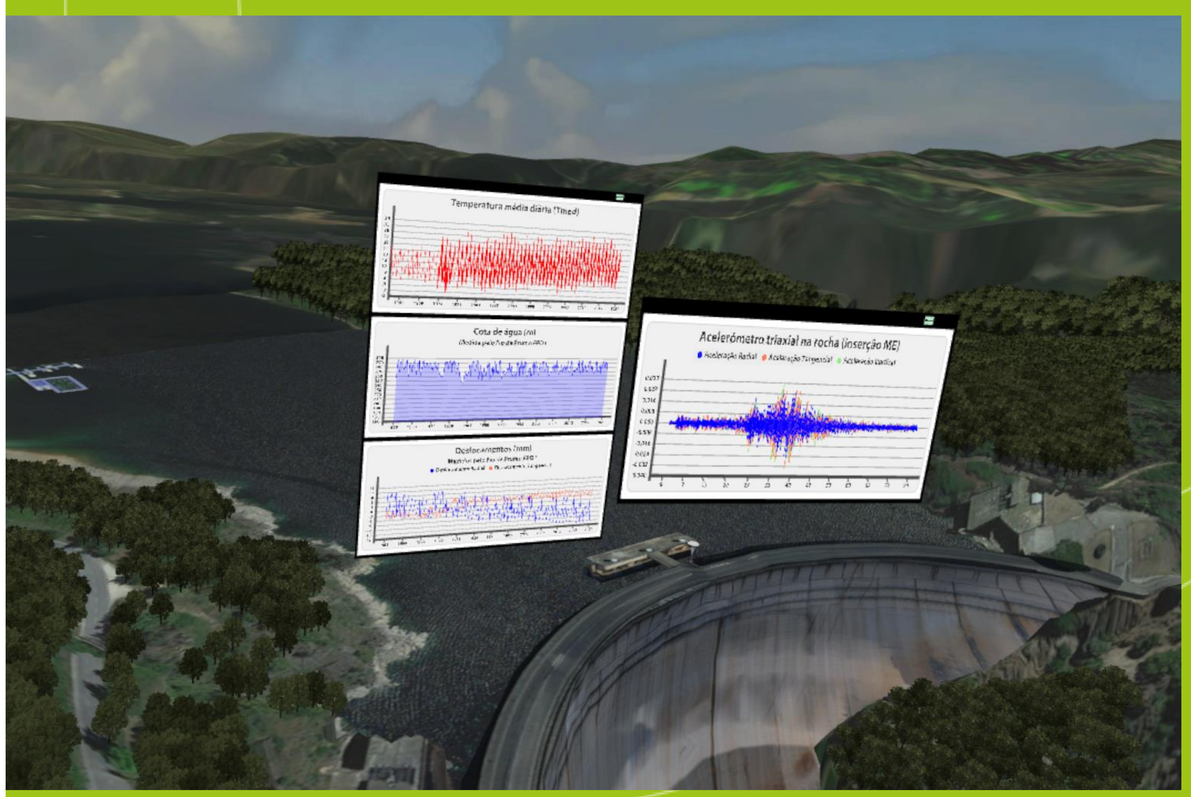
DEFINING TECHNOLOGY

LNEC LABORATÓRIO NACIONAL DE ENGENHARIA CIVIL

Dam Health Monitoring with VR

Pedro Leitão, Instituto Superior Técnico, University of Lisbon
pedro.de.leitao@tecnico.ulisboa.pt
Nuno Verdelho Trindade, INESC-ID, Instituto Superior Técnico, University of Lisbon
mail@nunotrindade.com
Sérgio Oliveira, Laboratório Nacional de Engenharia Civil (LNEC)
soliveira@lnec.pt
Alfredo Ferreira, INESC-ID, Instituto Superior Técnico, University of Lisbon
alfredo.ferreira@tecnico.ulisboa.pt



The prototype: *VRCabrilAnalysis*

Structural Health Monitoring (SHM) is the evaluation in real-time of a physical structure and the materials that compose it to detect failures as early as possible. This monitoring minimizes the risks and ensures the safety of the structure. While SHM is currently done through traditional methods, with the evolution of immersive technologies such as Virtual Reality (VR), it can be possible to integrate them there.

This work aims to explore the benefits and challenges of applying VR in the SHM of dams. To study the benefits and consequences of applying immersive analytics in the SHM of dams, we developed an application to run on a virtual reality environment called VRCabrilAnalysis. It allows users to explore the dam and analyze the measurements from the sensors installed at the Cabril Dam.

VRCabrilAnalysis is a VR application where users can move through a model of the Cabril Dam and interact with the sensors that exist there. It is possible to visualize the data measured by the sensors and analyze the damage evolution of the dam over time.

Future Work: evaluation

From a thorough evaluation of the prototype VRCabrilAnalysis we expect to obtain results that help in our study. Those results will be gathered through user tests. This application was developed as a proof of concept and will be continued with future projects. The results gathered by testing this version of the prototype will also be used to know the necessary adaptations that should be made in the application.

This application will be distributed in the future. The ultimate goal of this project is to have a digital twin of the dam, where it would be possible for multiple users to collaboratively perform the SHM of the Cabril Dam.

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