See+ – Interactive building inspections based on augmented reality

Summary

The project See+ aims developing an assessment and monitoring framework for maintenance and conservation of buildings, applying augmented reality (AR). The project domain includes three Thematic Strands (TS) at CERIS: TS1-Product Development in Civil Eng. Industries (CEI); TS2-Risk and Safety; and TS3-Rehabilitation of Built and Natural Environments.

Three specific goals were defined: (i) to perform a cognitive building inspection, enhancing the real buildings envelope based on previously observed and predicted anomalies; (ii) to confront theoretical and real degradation curves, calibrating the last; (iii) to offer a friendly, interactive, and systematic inspection experience - real-world environment augmented by digital elements, graphs, notes. The implementation will be conducted by a multidisciplinary and complementary research team consisting of Jónatas Valença (RG6), Ana F. Silva (RG5), Maria P. Mendes (RG2) and Eduardo Cavaco (RG6).

See+ is divided in the following tasks (T):

- T1 Framework requirements.
- T2 Design of the API-Application Programming Interface.
- T3 Development of the API.
- T4 Support the inspection.
- T5 Case study.

The framework developed is validated in Bairro de Alvalade, in Lisbon, Portugal, a neighborhood located at north part of the city. Identical buildings in different states of conservation are evaluated.

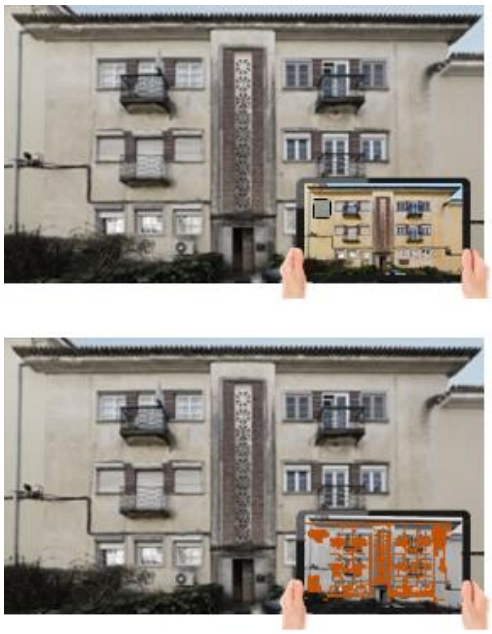

Figure1. See+ output example.

The project will lead to an interactive experience of a real-world environment, where previously detected and estimated anomalies are enhanced to provide a systematic and comprehensive inspection of buildings, thereby promoting digitalization in the construction sector.

Furthermore, it can contribute to supporting decision-makers and defining maintenance strategies.

Project Reference

-

Leading Institution

CERIS – Civil Engineering Research and Innovation for Sustainability

Partners

Ingeniarius, Lda.,

CERIS Principal Investigator

Jónatas Valença (jonatas.valenca@tecnico.ulisboa.pt)

CERIS Research Team

Ana Silva, Maria Paula Mendes, Eduardo Cavaco

Funding

CERIS – Civil Engineering Research and Innovation for Sustainability

Period

2023-2024

Total

7 500€

CERIS

-

Project Website

-