

Innovative experiences in augmented reality to integrate in the EduCITY app

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Abstract

EduCITY project expanded EduPARK, which used Augmented Reality (AR) technology based on geocaching for educational purposes in Aveiro city park. EduCITY intends to overcome the limitations of the previous project, extending its scope beyond the park and allowing the creation of 3D contents by a community to promote awareness about the responsible use of natural resources in the scope of Education for Sustainable Development. This work aims to investigate the possibility of incorporating AR contents in areas with or without markers, such as 3D models, interactive 3D menus, 3D contents in a given location, and to develop intuitive and easy-to-use mechanisms for users without technical knowledge to create these contents. URL: <https://educity.web.ua.pt/>.

Mechanisms

AR Books

The idea is to provide a form in the project's website so that users without computer knowledge can create AR contents through templates developed in this dissertation (Fig 1).

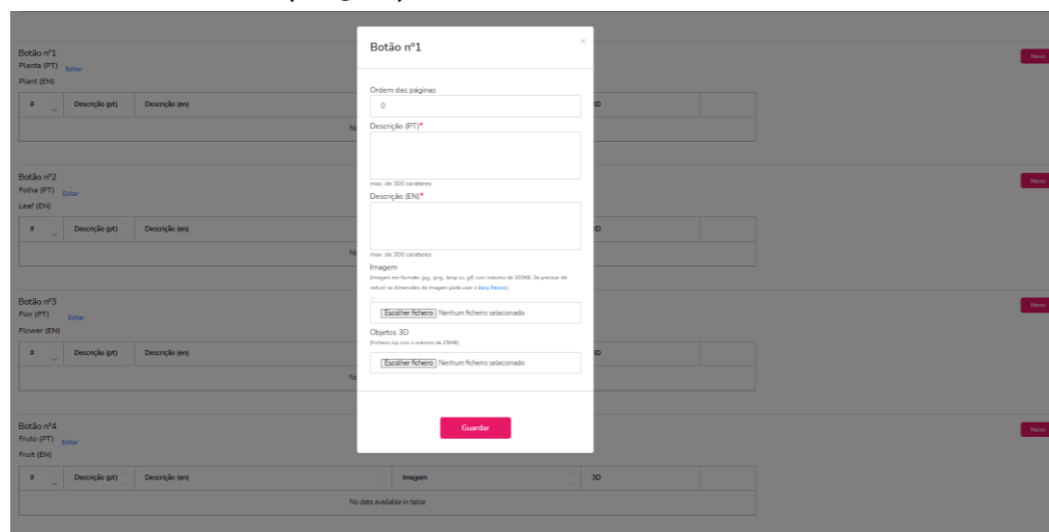


Fig 1–Example of a form to create ARbooks

AR Books are Augmented Reality dynamic menus that originally (EduPARK) provide information, in real time, about tree species, with markers in the park (Fig 2). The new AR Books template allows game developers to create a main menu with a maximum of 8 options, as in Fig 2, containing text on the left side and 3D models (Fig 3) or images on the right side (Fig 4).

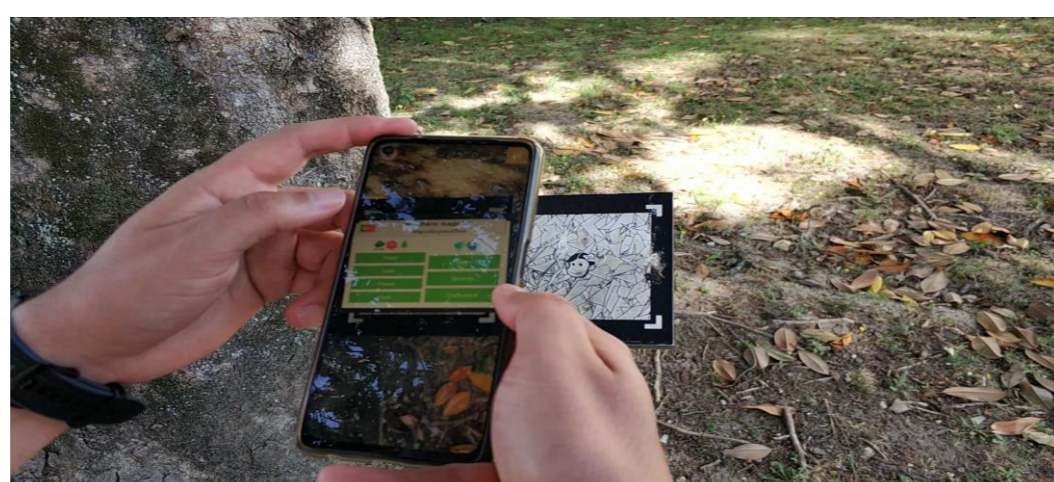


Fig 2–Example of the main menu in English



Fig 3–Example of submenu with 3D model in Portuguese



Fig 4–Example of submenu with images in Portuguese

AR GPS

When close to a predefined GPS location (less than 2m), an animated 3D object is shown along with text or audio (Fig 5).



Fig 5–Examples of the 3D flamingo on a location

Augmented Marker

Augmented markers insert information with interactive buttons on 2D images, as in Santo António tiles. (Fig 6).

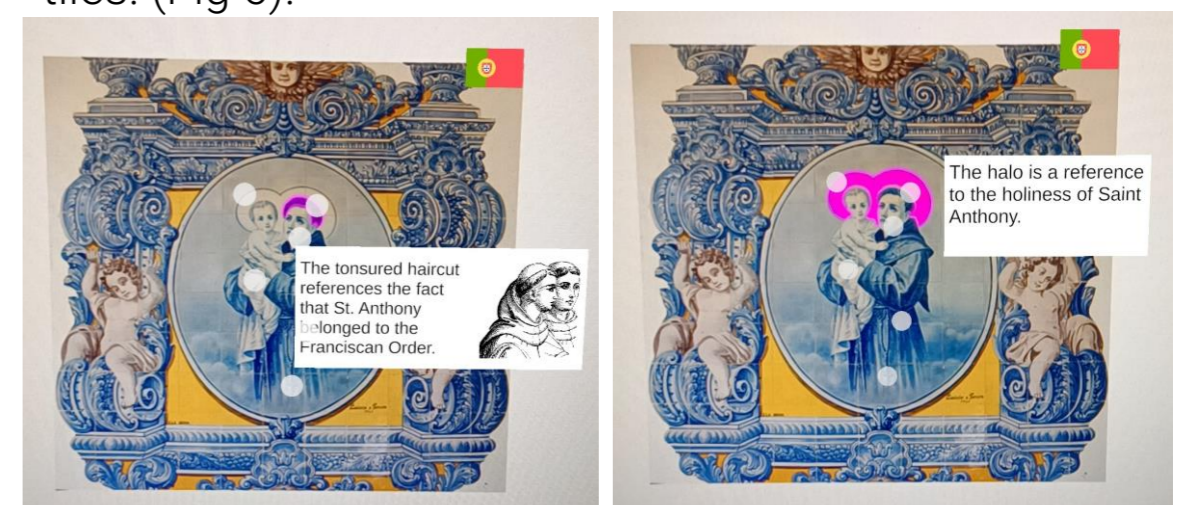


Fig 6–Example of Augmented Marker