DigiEduHack Solution
Turin - Improving the learning experience through Robotics
Challenge: Turin - Improving the learning experience through Robotics Challenge 2020

e.DO AR

Anywhere with everything, to let your imagination run free.

With e.DO AR the goal is to bring the robotic arm into augmented reality (AR), thus creating the possibility of interacting with tools and objects not available in real life. Making it possible to work in places that are difficult to reach or born from the imagination.

Team: Bucaschede

Team members

Mattia Dalla Pozza, Matteo Guarda, Samuele Visentin

Members roles and background

To do this, we basically needed Figma to create the UI designs and Adobe Premiere Pro to edit the presentational video. Figma itself is a collaborative UI/UX design tool, and we used it to its full potential, collaborating together in real-time. Plus, we've always been in touch on Discord to talk and exchange feedback.

We also have enough chemistry because we already do extra-curricular IT projects together.

Contact details

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Solution Details

Solution description

e.DO AR consists of four main parts: the application, the robotic arm, the 3D environment and a camera.

The application takes care of connecting all the other three components together, and creating a hub for controlling the arm in the virtualized plane.

Through the "controller" section, the user has different input modes to manage and control all the parts of the limb freely. The 3D environment will therefore be rendered in the application, becoming an integral part of the reality seen by the camera, where the robot can interact and work. Together with a level system, the user is stimulated to use and learn how it works, making the most of the potential and movements of e.DO.

The application integrates with the tools for digital education already present, providing a bridge between reality and augmented reality, a virtual experimentation plan.

The success of the tool is easily measured by the level of engagement of the people involved, the creative solutions presented and the commitment to their resolution. The tool will therefore be able to stimulate the owner, both from a logical and creative point of view.

Providing a virtual plane where you can potentially represent your ideas and experiment with reality.

Solution context

We want to have no physical limitations while creating experiences centered around the e.DO robot, so we decided to use augmented reality as it allows us to draw infinite assets on the screen and allows us to design exercises and paths to do with the robot that would not be easily achievable in reality.

So as to make it possible to teach how to use the robot in situations that are not easily recreated in real life.

Solution target group

The target of this application is virtually the same as the target of e.DO. The freedom of imagination and the increasing difficulty of the levels make it possible to interest more age groups. The same controller can be used at a basic level as well as an advanced one.

Solution impact

This application can impact greatly the possibilities of teaching experiences focused on e.DO, increasing and improving them, and it can be easily measured by the number of downloads in the systems where it will be distributed.

Solution tweet text

Are you tired of reality? e.DO will be your trusty robot in an adventure towards the virtual world, together you can learn, have fun and test your logic skills.

Solution innovativeness

In the field of robots used for educational purposes, we think it is an innovative and interesting solution.

Solution transferability

From the point of view of transferability, 3D rendering applied to reality can be applied modularly. It is in fact a technology that allows you to experiment with different types of models even before a physical counterpart. In particular, it applies very well to teaching, across a wide range of disciplines. For example, in architecture with the representation of models and drawings, or in history with the reconstruction and interaction of lost finds. Furthermore, with the addition of a viewer and tactile feedback, the experience becomes extremely immersive, comparable to reality.

Solution sustainability

The app can work completely client side, once the app is written there are no server maintenance costs. Obviously, this does not preclude the possibility of integrating the app with a back-end for further possibilities. It also does not require any further technical modifications to be applied to the robotic arm.

Solution team work

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