Technical Report

1. Abstract

A large number of companies embrace this way of promoting their products, via Augmented Reality. In fact, the HeGe Project comes to prove that the future is closer than we think, replacing human interaction with harder-to-tell simulations. HeGe has aimed and succeeded to make the process of acquisition of goods an enjoyable and strictly virtual experience.

1. Introduction

The assignment consisted of a web application, meant to offer users the opportunity to try out items of headgear in a virtual fitting room, with Augmented Reality (AR) support. The services that needed to be provided include shopping assist and trend alert.

1. Objectives
   1. Use AR and achieve reality-like experience
   2. Create a smart assistant, preferably with machine learning
   3. Use face-recognition for better applicability
2. Acknowledgements

Andreea Ghergu, who took part in the design stage.

Stefan Vasilache and Alexandru Vlad for offering advice with regard to the best approach for the augmented reality part of the project.

1. Method

To reach the goal, the following steps have been taken:

* 1. Design a friendly online headgear store with CSS and HTML

Our first attempt has at providing the best user-experience with Bootstrap. However, after learning it was forbidden, we aimed at creating a similar design to the first one, without using the front-end library.

* 1. Add functionality with JavaScript
  2. Introduce the assistant

In the next step we decided to create an assistant that could be called to give advice, and lead the customer if stuck on a page of the application. The advice the assistant gives, however, is quite naïve, for it uses random functions to print out different messages to the user. It can, nonetheless, fool an unexperienced average person, if number of possible expressions – the pool of phrases is high enough and not too repetitive.

* 1. Access camera

Different approaches were tried here, none of which were kept in the final version. The purpose of this step was to test the water.

* 1. Prepare 3D/2D models to be rendered on top of the livestream

We hunted down the best-resolution images and some real-looking and free 3D models.

* 1. Render models at right position

At this point, we assumed our best bet is with Unity and ARToolkit. We managed to place the png images on the camera stream, at a custom distance from the hiro marker. We decided that the client would hold the marker in front of the chest, and the image would be projected up, on his or her head. Although not ideal, since the distance from one’s chest to one’s head can vary dramatically, the solution looked good enough to pursue it further. Indeed, until the very end this solution seemed very promising. Unfortunately, an error occurred after build to WebGL platform, making it impossible for us to show in browser the progress. Learning of the incompatibility between WebGL and ARToolkit, we tried different alternatives, the best of which turned out to be the use of aFrame, three.js with ARToolkit. This time we settled for placing the products right on top of the markers.

1. Results

The web-application is ready to use: the customer can receive advice, pick an item and try it on.

1. Discussion

The trying on part could have been more convincing, that goes without saying. The technology is relatively new, therefore, the documentation and information on forums is lacking. There are a lot of magnificent things that can be done with AR, and we are confident that in a few years there will be the documentation to support it.

With regard to the assistant. This one could have been invested in more. The reason we chose not to, was because it wasn’t the main thing of the application. As for the AR-part,- it was critical to be done and as less sloppy as possible.

For reasons that pass our understanding, it seems that the main AR platforms and tools are created for mobile apps, rather than for desktop browser support, which we found disappointing.

1. Conclusion

There is a lot of potential in augmented reality for web. We just scratched the surface with this assignment.

1. Recommendations

The main piece of advice we would give is to make all your research thoroughly beforehand, to avoid headache. See diagram fig. 1 below at Appendices to further understand the importance of this issue.

1. References and bibliography

<http://jeromeetienne.github.io/slides/augmentedrealitywiththreejs>

<http://www.realitytechnologies.com/augmented-reality>

<https://github.com/dharmeshkakadia/awesome-AR>

<https://github.com/aframevr/aframe>

<https://medium.com/arjs/augmented-reality-in-10-lines-of-html-4e193ea9fdbf>

1. Appendices

Fig. 1: How useful AR-resources turned out to be(Comparison)