



CASE STUDY

Augmented Reality Smile Application

AVRspot



The Story Behind

By following and researching new technology capabilities, AVRspot opens new ways of augmenting reality and is ready to provide a new look and feel in beauty and health domains. Most people find well-worn, damaged or dark teeth unattractive, thus they opt for cosmetic dental reconstruction using ceramic crowns. However, any change to the teeth can have a significant effect on a person's facial expression. Therefore, starting with profound business and market demand analysis, AVRspot decided to develop a comprehensive mobile application for teeth & smile exchange.

The project idea can be used by dentists to allow patients to see how their new smile will look like after dental therapy, as well as by other users to have fun and switch smiles with friends and celebrities.





Challenge

AR Smile would work like Snapchat, by augmenting a teeth region with a filter, providing a perfectly looking smile. The application would enable the patient to take a picture on front and back camera, save it, choose an impeccable smile from a database and take a picture with a new smile within seconds.

This should be made possible by augmented reality: a picture is taken of the patient's own teeth, on which a virtual model of the new set of teeth is superimposed.

Scope of Service:

- App design;
- Architecture development;
- Quality Assurance.

Tools and Technologies:

- Unity 3D;
- Computer Vision Algorithms;
- Haar Cascades Algorithm;
- Face Landmark Recognition.

Platforms:

- Android;

Solution

Our technology stack for this project is Unity 3D, Computer Vision Algorithms, Haar Cascades Algorithm and Face Landmark Recognition.

The application enables an easy and fast experience by using computer vision algorithms. The solution can significantly facilitate teeth whitening process or it can be used for socializing and fun. The AR Smile works in the offline mode, allowing the user to view teeth in the menu or add smiles into the database.





The users can hold a phone camera in front of them and try on a new smile. Once the system locks onto the user's mouth and teeth, it overlays the chosen teeth. With just a few swipes, it is possible to configure the smoothness, scale, vagueness, and height of the teeth. The user or patient is able to see in real time how this alters their facial appearance and then choose whichever variant they like best.

In addition, users can try out not just one smile alternative, but as many as they like till they find a perfect one.

How we did it

As computer vision is starting to be utilized more and more, our highly experienced developers decided to build the AR Smile app applying Computer Vision Algorithms and Face Landmark Recognition. AVRspot started building a native Android application, that could recognize human faces and allow the users to pick up a smile through a well-designed, usable interface.

In order to apply teeth on a face, AR Smile first has to find the face, and it does this by using Face Landmark Recognition. The algorithm recognizes the way most humans faces are constructed which is generally the same.



Benefits

- ✓ An app can be used for both health and beauty industries;
- ✓ Dentists and orthodontists will be able to calm the fears of patients by utilizing the tool and showing them how their teeth can look like;
- ✓ When the patients see the final outcome, they will be motivated to proceed with treating;
- ✓ With computer vision algorithms patients will be able to see the outcome of dental treatment even before the dentist starts working on their teeth;
- ✓ More efficient treatment evaluation and improved quality of results;
- ✓ As people want to be beautiful and are looking for new ways to get better, an application can become a very important part of it as it gives a perfect shiny smile.



Results

Thanks to using new augmented technologies, AVRspot have managed to achieve good results.

The solution we developed can be applied by dentists to show their patients how their teeth would look like after the certain medical procedure.

Using Face Landmark Recognition, the app identifies the smile in the image and substitutes it on other smiles to determine the best fit. The users can then adjust the size and shape of the teeth to match their mouths on the picture.





About AVRspot

AVRspot helps clients transform their businesses by providing virtual and augmented technology solutions.

We solve sophisticated issues with creative strategy and large-scale engineering. By applying design-driven prototyping approach in combination with proven project management techniques our highly qualified team delivers outstanding digital solutions and content to our clients.

Our team of experts provide AR/VR Consulting, Product Design & Implementation, and Usability Testing. Moreover, we have experience in cross-border collaboration and virtual teams.