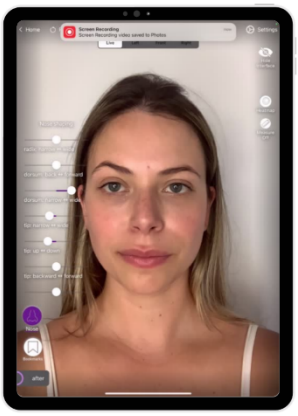
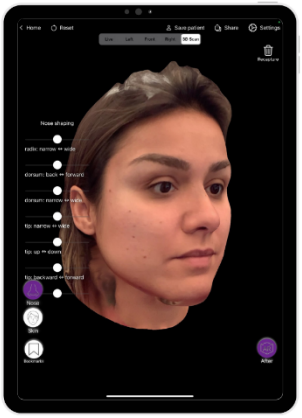
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

computer graphics laboratory

Bachelor Thesis

Cross-platform Real-time Visualization and Editing Interface of Breast 3D meshes

Introduction

Arbrea Labs builds **AR&3D** surgery simulators that have revolutionized patient-surgeon visual communication during consultations, and are a game-changer in aesthetic medicine and plastic surgery. Integral technologies to such tools vary from 3D Reconstruction and AR/VR to Neural Rendering and Physic Simulations. In this thesis we will focus on visualization and editing outside of iOS devices.

Task Description

The bachelor thesis consists of the following steps:

- Get acquainted with the relevant literature
- Render a mesh on the web and in an app with flutter
- Implement PCA and blend shape based editing of the meshes
    - Train a PCA model with the data provided by Arbrea
    - Analyze the params and extract a direction related to the breast size
- Build a visualization of the differences between two meshes
- Link the app to a backend “pipeline” that builds the mesh from a set of input images
- Build a fit correction UI that lets the user edit masks and breastlines to get a new 3D mesh and do a usability test/apply to various cases
- (Bonus) Implement AR rendering

Remarks

A written report and an oral presentation conclude the thesis. The thesis will be overseen by Prof. Markus Gross and supervised by Dr Endri Dibra and Dr Beren Kaul.

Contact

For further information, please contact (endri.dibra@arbrea-labs.com) or
the CGL thesis coordinator (cgl-thesis@inf.ethz.ch)

Arbrea Labs