



## Call for Master, Bachelor Thesis or Student Research Project

# Depth-Assisted Face Reconstruction: Leveraging RGB and Depth Information for Detailed Face Meshes

### Description:

Voice disorders have a significant impact on quality of life and cause absences from work and financial losses. According to research by Jung and Delb (2018), the probability of developing voice disorders in Germany is 6.6%.

Voice therapy covers various aspects, including improving voice quality, strengthening the diaphragm and voice, and working on chest resonance. Functional voice therapy is a proven effective method for treating voice disorders. This includes specific exercises that are designed as home therapy.

As part of the LAOLA project, an app is being developed with which the speech therapy exercises can be carried out. It represents an interactive training using real-time analysis of the visual and auditory aspects.

To do this, we are investigating whether models trained by machine learning can support voice therapists in their work by quantifying the performance quality of the exercises. For this purpose, sensor modality-specific models are developed and the measurement accuracies (of depth data and RGB cameras) are compared.

This work is dedicated to the development of advanced face mesh algorithms based on depth and RGB video data. The recorded videos are precisely annotated using facial landmarks. points on the face - are precisely annotated. A machine learning model is then used. model is then used. The aim of training this model is to enable it to independently identify facial landmarks identify facial landmarks independently and generate precise face meshes based on them.

In the case of a student research project or similar, a subsequent thesis is possible.

**Keywords:** data processing system, augmented reality, machine learning, Python, speech therapy

[1] JUNG, Sebastian. Systematisches Review und Metaanalyse zur konservativen Behandlung von funktionellen Stimmstörungen. Jung, 2018.

If you are interested and have any questions on this topic, **please book an appointment** via:

<https://calendly.com/fudickar/>

**PD Dr. habil. Sebastian Fudickar**

Nachwuchsgruppe Integration und Analyse von multimodalen Sensorsignalen und klinischen Daten zur Diagnostik und Erforschung von neurologischen Bewegungsstörungen" (MoveGroup)

weitere Themen für Abschlussarbeiten unter: [move.ulü.de](https://move.ulü.de)