Facial feature detection in height maps

👤 Assign	
⊗ Status	Completed
⊗ Priority	High 🔥
🕐 Date Created	@March 2, 2022 4:36 PM
📋 Due Date	

Log

Motivation

There are **two sides** in the landmark detection.

Side 1: Scene mesh

3D scene mesh + RGB → RGB landmark detection (Apple model) → Project to 3D scene

Side 2: CT data

CT scan → Generate height map → landmark detection (media pipe) → Project to 3D

These two set of landmarks are then used in the **registration process**.

Data Collection

- Collected data from the server

- Generated **volumes** and **heightmaps** using MarsTool

- Arranged data into one place

Generating height maps

- Using **MarsTool** to generate height maps

  - It create a volume from CT slices

  - Then just take the top/surface pixel to generate image

- Tool works, but

  - Have to do each volume manually?

  - Write

    - Batch script

    - or python script

    - or shell command inside jupyter notebook

- Using jupyter notebook for looping process

Approach

Preprocess

Preprocess_me

Preprocess_MrNa

MediaPipe

MediaPipe

PFLD

PFLD

Mediapipe vs PFLD

- Mediapipe is more accurate on heigh maps

- Told Mr. Na and Wonki

- Now we need mediapipe in `onnx` format for `unity`

    - Looking into that

Converting to ONNX

- Model link

- tf2onnx

    - https://github.com/onnx/tensorflow-onnx

```
python -m tf2onnx.convert --tflite ./model.tflite --output model.onnx
```