Face3D

Please read report in ./Report Daily

- **There are 3 folders represent 2 main tasks in this project**
  - **Convert 2D photo to 3D Model**
  - **Using Unity to interact with model**
  - **Report daily (I only put necessary report)**

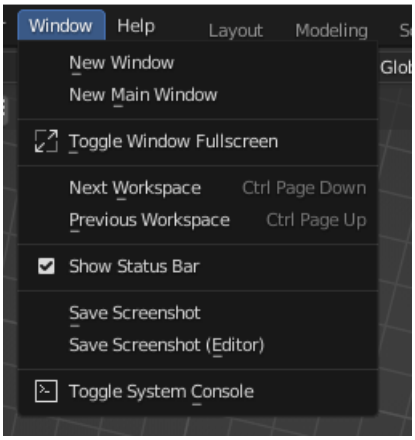
Convert 2D photo to 3D Model

Using Blender Python API

- In Blender file (I use **3.2.1)** Please import python, pip, PIL, numpy to run.

  If you fail in running , please open Blender, add this code to new script and run.

  Remember open ***Toggle Console*** see the output




```
import subprocess
import sys
import os

python_exe = os.path.join(sys.prefix, 'bin', 'python.exe')
target = os.path.join(sys.prefix, 'lib', 'site-packages')

subprocess.call([python_exe, '-m', 'ensurepip'])
subprocess.call([python_exe, '-m', 'pip', 'install', '--upgrade', 'pip'])

subprocess.call([python_exe, '-m', 'pip', 'install', '--upgrade', 'scipy', '-t', target])

print('FINISHED')
```

If you install successful pillow, please run this command to get your path:

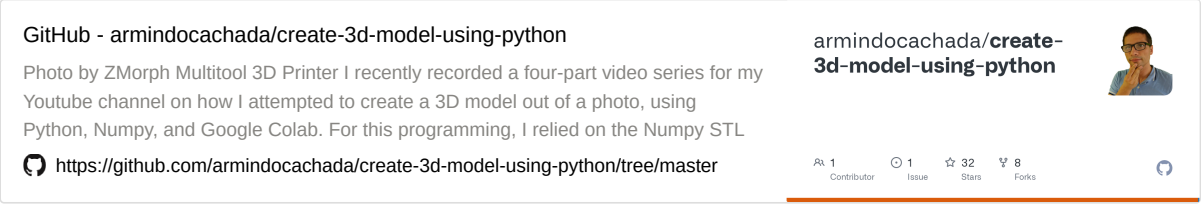
```
pip install pillow
```

Then replace this path in 2DImage.txt

```
import sys
packages_path=r"c:\users\le_nguyen_quang_minh\appdata\local\programs\python\python310\lib\site-packages"
sys.path.insert(0, packages_path )
```

- Done: Transform basic 2D photo to basic 3D Model. Code in .**/Blender/2DImage.txt** (Import to “Script” in Blender).
  - Create a mesh by using 10000 = 100x100 points for example and loop the linking 3 points together to create a triangle face. We have (100-1)^2 *2 faces
  - In the imported image, divided it into 1000 points like a mesh, calculate the pixel intensity of each point.
  - Find the height of each points (z-value) and then apply to the mesh.
  - **Challenge of this task:** When apply the height of each point to the mesh, the z-value <0 is not applied
- Done: Import 3D face model and image face (this image is transformed to grayscale - I converted successful). Code in .**/Blender/Face3D.txt**
- Doing: Get texture painting a human face with stencils.
- Read Morphable model.

Reference (Main):



https://www.youtube.com/watch?v=Q41QxPK5xzM

https://www.youtube.com/watch?v=QLI1uY2id20

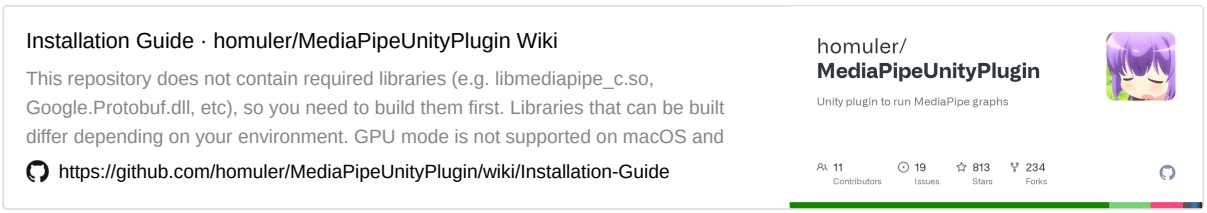
https://www.comp.nus.edu.sg/~cs6240/past-projects/3Dface/3Dface.pdf

---

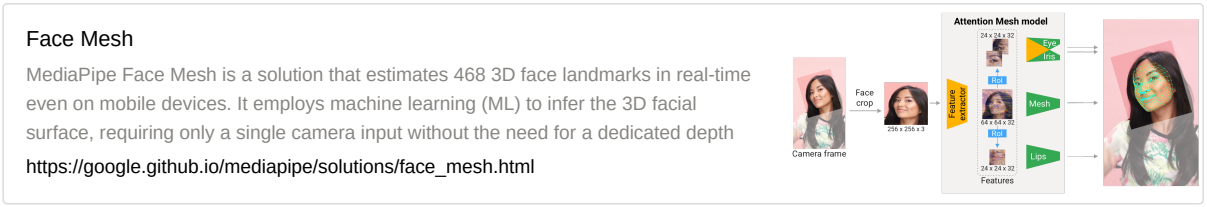
Using Unity to interact with model

Please read the report of guy working this task in .**\Face3D\Using Unity to interact with model**

- Using **MediaPipeUnityPlugin. Please read this guide to setup the enviroment.**



- I have put his working named “Kim Working” in folder. I have read this working yet, just a little bit so sorry I don’t know how to introduce.
- Mediapipe python version setup.




```
pip install mediapipe
pip install opence-python
```

- **.\Face3D\Using Unity to interact with model\Kim working\Code\CreateUvmap**
  - Have source code about creating UV map, the result in uv_map formatted JSON file and obj_model
- I think you don’t need to read “Kim Working” folder. If you can transform 2D Face to 3D Model, just install MediapipeUnityPlugin and bring this model to Unity and test it.