# HairEngine SDK

## Class specification

HEPoint: a class represent contour point 代表轮廓点的类

HEContor: a class represent contour of hair selection area 头发的区域类

HairEngine: main class of HairEngineSDK

Methods:

1. initEngine: call after creating engine instance, before any call action; dataDi: directory where data for initialization located. useRegressor: indicate use FaceRegressor developed by Chen Cao (GAPS-ZJU) or libASM instead.
2. closeEngine: release resources engine holding
3. setImage: set a portrait image of RGBA format and working directory where all temp files located.
4. addStroke: add foreground stroke(type = 1) or background stroke(type = 0).
5. clearStroke: clear all strokes.
6. finishStroke: detect face; generate head and hair model with corresponding texture.
7. InitViewer: initialize inner OpenGL renderer
8. closeViewer: clear OpenGL resources.
9. resizeViewer: resize OpenGL windows size.
10. setHairDir: set hair style directory.
11. setTransform: set head rotation and global scale.
12. resetTransform: reset head rotation and global scale.
13. adjustHairPosition: adjust hair position and scale to fit head.
14. resetHairPosition: reset hair position and scale.
15. enableShadow: enable or disable shadow. Deprecated.
16. enableExpression: enable or disable expression on face.
17. render: render a frame.
18. setDermabrasionDegree: set the degree of dermabrasion.
19. finishStrokeStep1: detect face and generate head model, return true if face detected or false otherwise.
20. finishStrokeStep2: generate face texture and hair texture.
21. getFeatureMat: return 76 feature points of face.

## Usage

Function calling order:

Normal usage:

1. initEngine
2. setImage
3. addStroke
4. initViewer
5. finishStroke
6. setHairDir
7. render
8. closeViewer
9. closeEngine

Export data

Define the ExportData macro, setHairDir function will export data in work directory.

1. initEngine
2. setImage
3. addStroke
4. initViewer
5. finishStroke
6. setHairDir
7. closeViewer
8. closeEngine

Exported files:

generated after call finishStroke

face.png

trans.txt

boundary.txt

head.obj

generated after call setHairDir

headImage.png

hair.obj hairImage.png

back.obj backImage.png

trans.bin

About Animation Expression

1.Add macro AnimateExpression macro to Renderer.h

2.Copy animations.dat to HairEngineInitData/RenderData

3.Use function setModifier to change animation

Attention: OpenGL is use for generating head texture, so it still need a context for this version.