For the main code:

1. First, the opencv4 should be downloaded and included in the project
2. Second, you now can run the code:
   a. the model for face detection and face landmark detection stored in relative path,if it can not be loaded, you can change it into direct path
   b. the picture path you can enter any path in my beauty database
3. now, you run the main code:

```
+----------------------------------------------------------------+
|----------------welcome to the beauty portrait tool-------------------|
|---------------------1.face polishing function------------------------|
|---------------------2.face whitening function------------------------|
|---------------------3.face thinning function-------------------------|
|---------------------4.auto make up function--------------------------|
|---------------------5.other effect display---------------------------|
+----------------------------------------------------------------+
-----------------please enter the image directory--------------------
-the format is written as /Users/wangsiwei/Desktop/毕业设计图片/美白/171.jpg
```
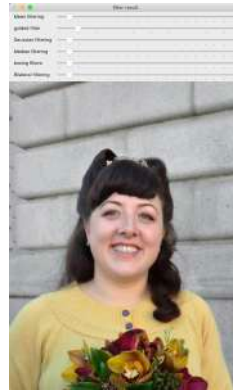
If you choose one:

```
+----------------------------------------------------------------+
|----------------welcome to the face polishing function-----------------|
|-------------------1.anto face polishing ------------------------------|
|-------------2.display of other polishing filter effect----------------|
|----------------3.adjust best face polishing algorithm----------------|
+----------------------------------------------------------------+
-----------------please enter your choice(1/2/3)----------------------
```

The first is auto display, but the other two you adjust and see the effect

The first effect is shown as:

The second effect is shown like:

The third effect is shown as:

If you choose 2:

```
+-----------------------------------------------------------------------+
|----------------welcome to the face whitening function----------------|
|--------------------1.anto face whitening ----------------------------|
|--------------2.display of other skin detection effect----------------|
|----------------3.display of other two whitening effect---------------|
|----------------4.adjust best whitening effct algorithm---------------|
+-----------------------------------------------------------------------+
------------------please enter your choice(1/2/3/4)--------------------
```

The first effect is shown as:

The second effect is shown as:
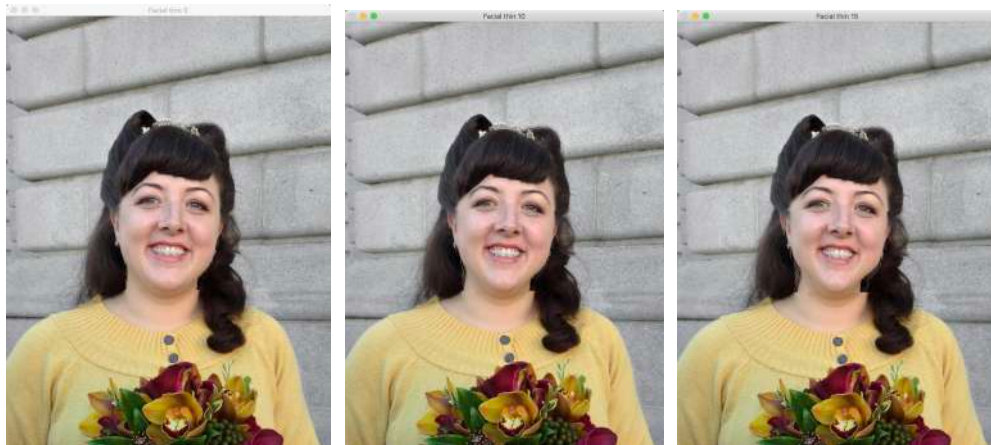Just the same as the skin effect shown below

The third effect is shown as:

The fouth effect is shown as:

If you choose 3

```
+----------------------------------------------------------------+
|----------------welcome to the face thining function------------------|
|----------------1.anto face thinning effect display ----------------|
|----------------2.other face thining effect------------------------|
|----------------------------------------------------------------|
+----------------please enter your choice(1/2)----------------------+ :
```

The first effect is shown as:
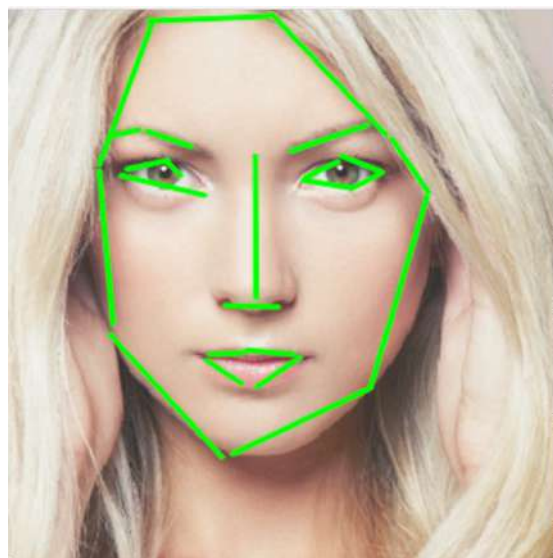

The second effect is shown as:

If you choose 4


```
+--------------------------------------------------------------------+
|-------------welcome to the face make up migration function---------|
|------------------1.anto face make up migration --------------------|
|------------------2.simple face morphing effect--------------------|
|--------------------------------------------------------------------|
+----------------please enter your choice(1/2)----------------------+
```

The first effect:

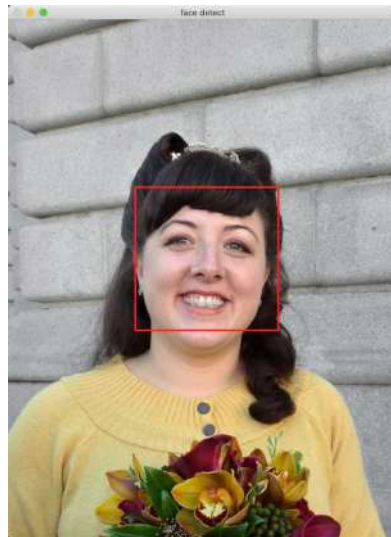The second effect is shown as:(the morphing line can draw as☺

If you choose 5

```
+--------------------------------------------------------------------+
|------------------welcome to the other function display--------------|
|------------------1.face detection effect display -------------------|
|--------------2.face landmark detection effct display----------------|
|--------------------------------------------------------------------|
+------------------please enter your choice(1/2)---------------------+
```

The first effect is shown as:

The second effect is shown as: