

CS633 Computer Animation
Programming Assignment 2 (40 points)
Due: 4/10/2018

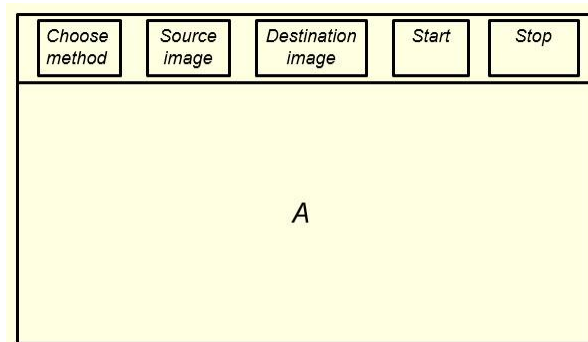
Your job here is to implement both "coordinate grid" based and "feature" based approaches to perform morphing on two given images, a source image and a destination image.

The command line for the execution of your program should be as follows:

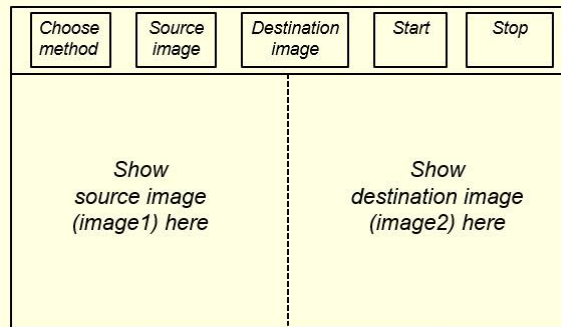
```
prog3 image1 image2 k
```

"prog3" is the name of the executable, "image1" is the name of a source image file, "image2" is the name of a destination image file, and "k" is the number of intermediate images to be generated during the morphing process.

Once executed, your program should display a layout as follows on your screen:



The five small rectangular areas should again act as menu items (buttons). The first (left most) area should act as a pull-down menu button so that when it is clicked, the user can select a morphing approach: "coordinate grid" based or "feature" based approach. Clicking in the second rectangular area will bring up the source image: image1. This image should be shown on the left half of the working area, as follows. If the "coordinate grid" based approach is selected in the previous step, the user should then click at (m x n) points to define a grid on this image. Otherwise, the user should then input a set of arrows to specify a set of features of the source image: image1. Each arrow is defined by two points. The first pair of points input by the user defines the first arrow (the first point is the start point and the second point is the end point of the arrow), the second pair of points input by the user defines the second arrow, The input phase is terminated by clicking the middle button of the mouse.



Clicking in the third small rectangular area brings up the destination image: image2. The image should be shown on the right half of the working area, as above. The source image and the destination image should be of the same dimension. The user should then either click at (m x n) points to define a grid on the destination image or input a set of arrows to specify a set of corresponding features on the destination image. The number of arrows specified for image2 must be the same as the number of features specified for image1. The input phase is terminated the same way as the source image.

By clicking in the fourth small rectangular area, the user starts the static morphing process (in either the left half or the right half of the working area) and by clicking in the fifth area, the user terminates the morphing process. The morphing process should be performed with "k" intermediate images where "k" is the number of intermediate images specified in the command line. Note that once an intermediate image is displayed, your program should wait for the user to click the left button in the display area before showing the next intermediate image.

You can either use the images provided by me (can be downloaded from my web page, the links are right underneath this programming assignment) as the source and destination images, or use your own images as the source and destination images. For simplicity, I suggest that you all use the same format: bmp. Programs to read and display a bmp file are provided below.

(memBMP.cpp)
(memBMP.h)

In your program, don't use 'bool'. Instead, define your own 'BOOL' as follows:

```
#define BOOL char
#define false 0
#define true 1
```

References:

T. Beier and S. Neely, Feature-Based Image Metamorphosis, Computer Graphics (SIGGRAPH Proceedings), 26,2 (July, 1992), 35-42.

Note: The book has a program for this project. But do not use it. It is wrong.

Mail your program (in one file) to "cheng@cs.uky.edu" on or before the due date. Then come in during my office hours between 4/12 and 4/19 for a demo.