

Due date: Written report - Monday, March 16 at 12:00 noon
- (PDF file submitted through Canvas)
Oral presentations - in class during last week of classes

Organization: Team project, each team consisting of two to four class members.

What is required: A movie video, consisting of a computer animation of an image "morph" or a perspective view flyby. We will be defining these terms in the next few lectures. The animation should demonstrate that you have been able to incorporate many of the techniques we have developed in class to produce a movie.

This project should be the equivalent of 2-3 weeks of homework labs. We will have a reduced exercise lab schedule the last two weeks of class to accommodate the extra work, as well as extra time in the lab for developing your video.

In the presentation, you will demonstrate a movie generated on one of the lab computers. I suggest you use the matlab movie feature, in which you generate several frames and project them in movie format on the screen. These can be displayed as mpeg movies from your computer or transferred to DVD or VCD and displayed on the projector in the classroom for the oral presentation.

The specific subject matter is up to you. But it should contain an animated flyby (a changing perspective view of an object along a defined trajectory) or else a series of morphs, whereby one image dissolves into another sequentially.

The written report documents how you used techniques we developed in class to produce your animation. As for length, 10-20 pages or so should be sufficient, but you are free to use more. The grade will depend not on the length, but on the following factors:

1. Degree to which EE168-related topics are integral to the product
2. Demonstration of the completed animation in class
3. Identification and explanation of image processing algorithms you used
4. A clear, concise, and logical description of what you have done

Importance of each criterion is in the same order as above, i.e., the most important thing is to demonstrate mastery of techniques learned in EE168.

Schedule:

Assignment of project	Feb. 11
Teams selected	Feb. 18
Topics identified, sub-projects started	Feb. 25
In-class presentations	March 10-12
Written report due	Noon, March 16

Sample Final Project Outline

The main thing for your report is to make it logical and make it clear. Sometimes brevity is better than length, if the point you are trying to get across can be stated clearly and succinctly. A sample outline for a final report might be something like the following. You need not follow this exactly, but this would be an acceptable format.

I. Introduction. This section would contain an overview giving a short description of what your animation does, what are the main image processing steps involved, and a summary illustration (perhaps) of a sample frame that depicts one of the image processing operations used.

II. Description of the intended sequence, such as a storyboard or a "plot" summary that identifies the major image processing steps.

III. Discussion of the image processing techniques involved. If you are doing a flyby, then here is where you would introduce the idea of perspective viewing, describe the coordinate system you choose, and define details of the flyby path. You would also identify and describe how you are dealing with color, with holes created in the perspective transform, or needed stretches or histogram modifying operations. Similar items would hold for morphing operations-- you'd like to say why you want to use a morph rather than a straight blend, for example. You also may be using some zooming of other geometrical transformations.

If you had to derive new projection equations, for example, you would want to give some details of why this was necessary and what your new equations are. In the case of morphing, you would want to say what intermediate frames you generate and which you let the computer animate for you. Some calculations of the total distortion of the image and its realism might help here.

IV. Technical implementation details. Here you would want to give an idea of how the implementation was done. Say more than "I used matlab and the equations in class." Describe something about the logic for doing things the way you did, and discuss any steps you used to improve the efficiency or speed of the calculations. A very high level pseudo-code description of the complete algorithm might be helpful, but don't just include a listing of your program. That is too much detail for a reader to understand.

V. Finally, illustrate with a few sample frames and discuss the success of using animation techniques to get your message across. Are the limitations technical, such as limited applicability of the perspective equations, or are they due to having to use matlab on a slow workstation ?

Wrap up with a succinct summary of what you started out to do, how well it worked, and a statement of what you might do next time to improve on the results.