

Digital Image Processing CSL/COL 783

Assignment 2 : Image Morphing and Bilateral Filtering

Date: 14.9.2015

Due Date: 4.10.2015

Part A: Image Morphing Implement triangle based approach for image morphing for face images. This would require:

- Correspondence of features -- use methods to automate the process. Use the context given that images are of frontal faces which may also define semantics of features in terms of relative positions of features.
- Image morphing between two images. Delaunay triangulation or any other triangulation available in the library may be used for the purpose of obtaining the triangulation of feature points. One may have to add feature points at the boundary of the image to include the entire image.
- Find average of a group of 10-20 favourite students from class of CSL/COL783.
- Consider these images on the boundary of a circle. Define a trajectory through the circle with some key points and create a sequence of morphing. The weights to combine the faces may be determined as barycentric combination of the three images forming a triangle with two images in the boundary and one (the average) at the centre. The key points of the trajectory may be specified with a user interface. Interpolation of color may be given as an option. If it is selected the color shall change as a combination of all the faces which are contributing else the color of the source image will be retained (will show warping of the source face).

Part B: Bilateral Filtering This part of assignment requires implementation of Bilateral Filtering and comparison with filters like high boost. The implementation should include:

- Implementaion involving two Gaussian kernels one for domain (spatial) and one for range (intensity). Show effects of standard deviation for each Gaussian function.
- Explore using the filter for automatic feature detection for Part A

Note:

1. You can do your assignment in a group of maximum size of two.
2. Write a page report on the experiments and analysis which you will do with the different tools you will implement.