3D Surface Registration

Surface matching is fast and robust, even in the presence of image noise and incomplete overlap of the image volumes. Both volumes must contain common objects, which must be explicitly segmented from the grayscale image data and saved as a grayscale or binary image. A surface is extracted from both a "base object" and a "match object" that are preprocessed from the base volume and match volume, respectively. This exercise will demonstrate how to achieve an optimal registration of two 3D volumes based on corresponding surfaces.

1. Load the **Edited_MRI_Head.avw** and the **Edited_PET_Head.avw** data sets from the **$:\BIR\images\TutorialData** directory.

2. Select the **Edited_MRI_Head.avw** data set, then while holding down the <**Ctrl**> key, select the **Edited_PET_Head.avw** data set.

3. Open the **3-D Surface Registration** module (**Register > 3-D Surface**).

4. Select **File > Input/Output Ports** to view the import and output ports at the bottom of the main 3-D Surface Registration window. Make sure that Edited_ MRI_Head is the base volume, and Edited_PET_Head is the match volume.

5. Open the **Blend** window (**Generate > Blend**). Set the **Blend Type** to **Green-Red**.

6. Examine the combined images to determine if they need to be registered.

7. Select **Generate > Register** to register the two volumes.

8. Select **File > Save Transformed** and save the transformed PET to the Analyze workspace.

9. Close the 3-D Surface Registration module before proceeding to the next exercise.

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