Volumetric Image Visualization

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Task 5

1 Surface rendering for opaque objects

Figure 1 illustrates on the right side the rendition of opaque objects with a distinct color per object and, on the left side, it displays a slice overlaid by the transparent color masks of those objects.
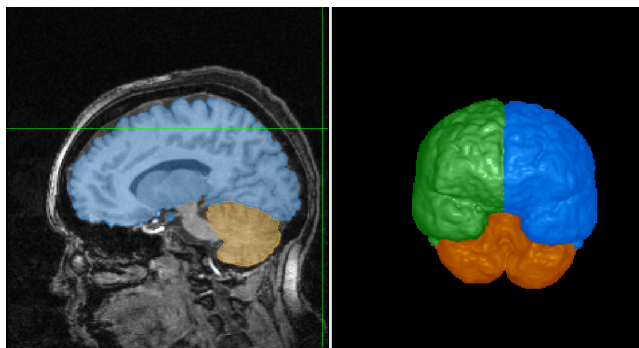

Figura 1: Example of surface rendering with opaque objects.

2 Task

You must develop a C code, surface-rendering.c, with the following usage:

  surface-rendering P1 P2 P3 P4 P5 P6, where

P1 is the name of the original scene (.scn).

P2 is the name of the label scene (.scn).

P3 is the viewing tilt angle α.

P4 is the viewing spin angle β.

P5 is the resulting rendition (.png).

P6 is an optional $p_0 = (x_0, y_0, z_0)$ coordinates of a point p_0 in the scene.

The code should create a rendition in P5 for the objects in P2 by assigning a random color to each object, assuming they are opaque, using the provided viewing direction in P3 and P4, and computing surface normal vectors from P1. Parameter P6 is by default the center of the scene P1. However, you may enter with "x_0, y_0, z_0". You should create three extra images, axial.png, coronal.png, and sagital.png with the corresponding slices at p_0 overlaid by the transparent color masks of the objects.