On the other hand, we observed that 48 angular divisions for the highest resolution level are sufficient to obtain an acceptable approximate alignment. Although the maximum error on the rotation around the normal vector that could be committed is 3.75 °, in practice the algorithm evaluates the similarity of so many correspondences with different orientations of the normal vector that usually the rotation error is under that value (as shown in the results).

Figure 9d shows the coarse alignment obtained for the reduced point cloud and a 3D rendering when the transformation obtained by the algorithm is also applied to the original data.

**Figure 9.** Alignment of two range images for the object ‘hip’ from the Stuttgart University Database. **(a)** Range images. **(b)** Corresponding points (normal vector in magenta) which obtained the maximum similarity value for the top resolution level. **(c)** CIRCON images found for the three resolution levels. **(d)** Alignment: reduced cloud (left) and 3D rendering using the original point clouds (right). Rotation error: 1.1909°. Translation error: 0.7436 mm.