

VRML based visualization of discrete tomography pictures

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Discrete reconstruction tomography deals with reconstruction of cross sections of 2D or 3D discrete objects from their projections. Discreteness means that the picture- or volume elements can take values from a known finite discrete set. In this case the reconstruction of homogenous objects is in focus, when this set is two-valued (i.e. the points of the object and the background). We have proposed an image processing system, which permits of testing and comparison of the most important discrete reconstruction algorithms. One of our purposes was also that the system should be accessible via Internet. The three main parts of the system are generating test data, running reconstruction methods and the visualization of the result.

Visualisation means here the conversion of the results to VRML formatted document to be displayed by Internet browsers. The result of the reconstruction is 2D or 3D binary image, which is saved in an ASCII file with its projections. The system converts these files to VRML document. The user can customize the layout of the displayed object. The style of the object points and the projection points can be specified. One or two object can be displayed at the same time, the number of projections to be displayed is not restricted. If there are more objects in the result of reconstruction, the user can select the object and projection of interest. Further information (grid of discrete space, projection rays, highlighted points of the object etc.) can be also displayed.