DIRECT

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Hungarian Research Foundation [5]
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Related projects: New Directions in Discrete Tomography and Its Applications in Neutron Radiography [9]
Lifetime from: 2001
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Homepage: Homepage [10]

Short description:
Sample Algorithms in Discrete Tomography developed at the Department of Image Processing and Computer Graphics.

Description:
Discrete REConstruction Techniques (DIRECT) is a toolkit for testing and comparing 2D/3D reconstruction methods of discrete tomography (DT). The toolkit involves generating projections of discrete objects, running reconstruction methods, and visualization of result. DT deals with reconstruction of cross sections of 2D or 3D discrete objects from their projections. Discrete objects can be divided into two classes: pixel/voxel based images (whose pixels/voxels can take value from a finite set), and parametric images (representing polygons, ellipses, closed 3D regions with triangulated surfaces, etc). The advantage of this toolkit is the possibility to reach it from Internet. The user needs only a web browser that is able to display VRML objects. The generation of data, the reconstruction, and the visualization can be parameterized per web-forms. The process of using this toolkit consists of 3 easy steps. The first step is to generate projections, the second step is the reconstruction, and the last step is the visualization of results (that is also implemented in 3D). When a step is finished the next will be loaded automatically by the browser. If the user has already a file with projections the process can be started at the second step. The user can download the file containing the result in each step. The result of visualization is available in VRML format.

License:
Only registered users are allowed to upload their own projection files. Non-registered users can only use the software in test-mode.
Publications to cite: Reconstruction of pixel-based and geometric objects by discrete tomography, Simulation and physical experiments [11], Kiss, Zoltán [12], Rodek Lajos [13], Nagy Antal [14], Kuba Attila [15], and Balaskó Márton [16], ELECTRONIC NOTES IN DISCRETE MATHEMATICS, 2005, Volume 20, p.475 - 491, (2005)
Multi-resolution method for binary tomography [21], Ruskó, László [22], and Kuba Attila [23], Workshop on Discrete Tomography and its Applications (WDTA), 2005, Volume Proceedings of the Workshop on Discrete Tomography and its Applications (WDTA), New York City, USA, p.299-311, (2005)


Links: