

DDV, A TOOL FOR GEOMETRY EXTRACTION FROM IMAGE DATA

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A minimum requirement for the generation of three-dimensional grids is some sort of description of the bounding surfaces of the objects to be gridded. For manufactured parts this typically comes from the geometry definitions in a CAD system. Data obtained from biological systems, on the other hand, typically come from an imaging device having as its output point objects on a three-dimensional grid with no explicit description of the underlying geometry.

The creation of geometric surfaces from image data suitable for input to a grid generator may require extensive human intervention. Problems such as noise, lack of image registration, nonlinearities in the imaging system, and lack of well-defined boundaries may require human intervention during the process of defining surface boundaries.

Digital Data Viewer (DDV) is a computer program designed to aid in the identification and extraction of geometric surfaces from three-dimensional image data. It provides the following capabilities:

- Interactive viewing of slices normal to the three principal axes
- Selection of subvolumes
- Histogram of data values
- An overlay data set allowing selection of ranges from the data
- Segmentation based on data or overlay
- Isosurfacing of real or overlay data
- Interactive drawing on the main or overlay data sets
- One- and two-dimensional data plotting and analysis
- Support for registration and tomographic reconstruction of raw images
- Edge finding based on gradient information

DDV is written in C++ and is available for Microsoft Windows, Apple MacOSX, Linux, and a number of unix platforms.