Visualization of Large Unstructured Grids. Efficient Point and Cell Location

By Philipp Güth

GRIN Publishing Aug 2015, 2015. sonst. Bücher. Condition: Neu. Neuware - Seminar paper from the year 2013 in the subject Engineering - Computer Engineering, grade: 1.0, University of Heidelberg (Computer Graphics and Visualization), course: Seminar Computer Vision, language: English, abstract: Visualization of large data sets, especially the visualization of unstructured grids, is a challenge due to the unstructured nature of the data which oftentimes causes large overheads in memory as well as performance problems on large grids. Problems emerge because existing solutions generally presuppose properties like uniform point distributions for datasets which are usually not existent in unstructured grids. These issues become particularly problematic on large grids since the existing solutions, if they work at all for unstructured grids, do not scale well. In this paper I will present two innovative approaches to visualization in large, unstructured grids. The first approach was developed by Max Langbein, Gerik Scheuermann and Xavier Tricoche. It makes use of cell adjacency and a complete adaptive k-d tree and utilizes ray shooting to locate points for visualization. The second approach was developed by Christoph Garth and Kenneth I. Joy. They use an innovative data structure, the celltree which is based on a bounding interval hierarchy,...

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