Adaptive Extraction of Time-Varying Isosurfaces

Benjamin Gregorski*† Joshua Senecal* Mark Duchaineau*
Kenneth I. Joy†
*Center for Applied Scientific Computing, Lawrence Livermore National Laboratory
†Center for Image Processing and Integrated Computing, University of California, Davis

1 Video Summary

The video submitted with the paper is a subset of the video included at url **http://graphics.cs.ucdavis.edu/ ˜gregorsk/Vis2003/Vis2003.mpeg**. The video starts at time step 0, isovalue 223.5, and an error of 1.3. At time step 88 (frame 140) the error changes to 1.0, at time step 135 (frame 249) the error changes to 0.6, and at time step 221 (frame 430) the error changes back to 1.0. The time step is reset to 0 and playback starts again. At time step 657 the isovalue is changed to 200.5, at frame 729 the error is changed from 1.0 to 0.6, and them at frame 956 the error is raised back to 1.0. Figures 1, 2, and 3 show the number of triangles, isosurface reextraction time, and number of page faults for the video. The larger increases in triangle count, extraction time and page faults starting at frames 250 and 730 corresponds with the error changing from 1.0 to 0.6. Similarly, the drop in triangle count and extraction time, and the decrease in page fault rate around frames 450 and 950, corresponds to the error changing from 0.6 to 1.0. Over the course of the movie, a total of 5180 pages were loaded. This corresponds to about 0.89 GB or 7% of the total dataset.

2 Acknowledgements

This work was performed under the auspices of the U.S. Department of Energy by University of California Lawrence Livermore National Laboratory under contract No. W-7405-Eng-48. We also

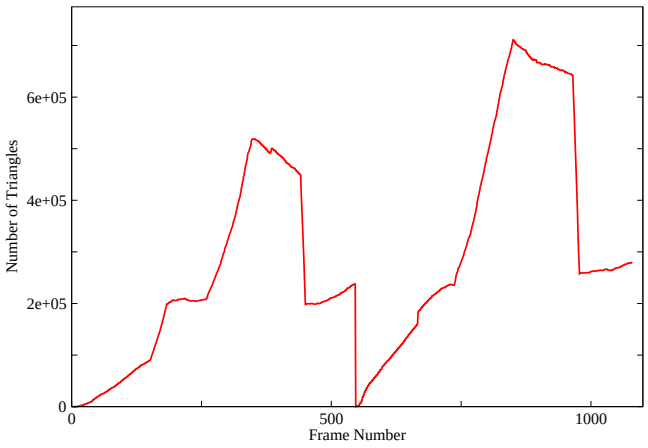

Figure 1: Number of triangles in the extracted surface.

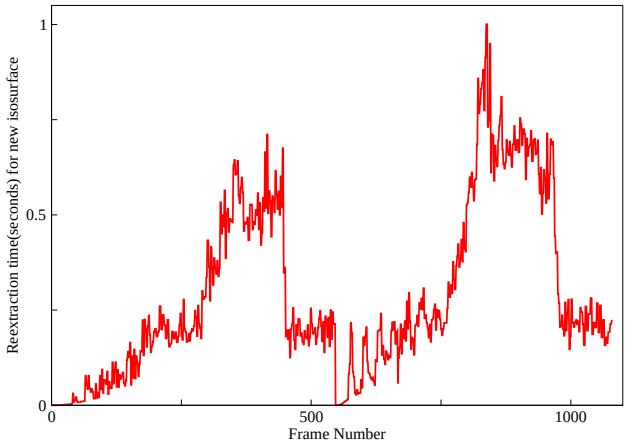

Figure 2: Time in seconds to reextract the new isosurface.

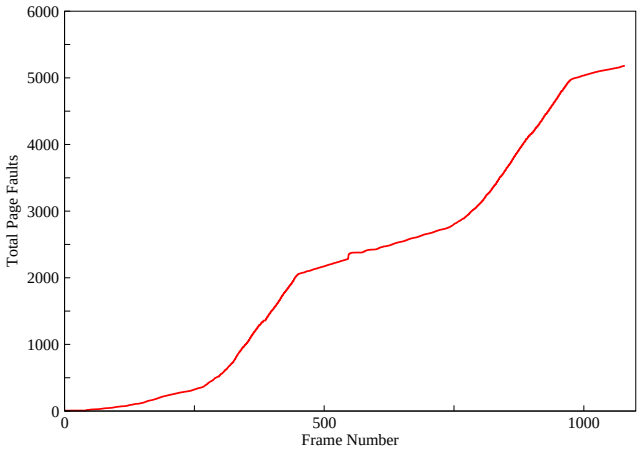

Figure 3: Running page fault count.

*{gregorski1,senecal1,duchaine}@llnl.gov, †kijoy@ucdavis.edu