Assignment

csci 3225

Due Tuesday december 2nd in class

Answer briefly the following questions based on your reading of "Hybrid MPI/GPU interpolation for Grid DEM construction" by Danner et al, ACMGIS 2012.

Policy:
- Collaboration is NOT allowed, please work individually.
- Please type you answers.

1. In addition to CPU cost, the paper lists two factors that affect running time and which they specifically try to minimize and balance —— what are they?

2. If you were to asses performance of a software that runs on a parallel system, what type of experiments would you want to see?   Discuss.

3.   The overall approach has 3 phases: segmentation , neighbor finding and interpolation. Which of these phases is parallelized and which isn't? Why?

4. The goal of segmentation, at a high level, is to divide the data in tiles, so that each tile can be handled separately. One way to achieve segmentation is via a quad tree partition, as done in this paper.   Another way is via grid tiling , as done in the paper by Isenburg et al (see class website for link). Discuss the pros and cons of segmentation via tiling compared to segmentation via a quad tree partition.

5. The paper presents an interesting finding about quad tree construction running time —— what is it?

6. Why are larger values of leaf size better for the GPU interpolation?