CUDA Accelerated Sparse Field Level Set Segmentation of Large Medical Data Sets

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1 Introduction
- Image segmentation is an important task in diagnostic medicine
- Level set segmentation techniques have been shown to improve the accuracy of difficult segmentation tasks
- Previous level set segmentation techniques are computationally expensive even when running on the GPU
- Long computation times limit clinical utility
We present a novel CUDA accelerated level set segmentation algorithm with significantly improved performance over previous algorithms.
- 360x speedup compared to previous CPU algorithms
- 16x reduction in the size of the computational domain compared to previous GPU algorithms
- 9x speedup compared to previous GPU algorithms
- No reduction in segmentation accuracy

2 Sparse Field Algorithm

3 CUDA Implementation

4 Results

5 Conclusions

6 References