Comparison of Collision Handling Methods for Cloth using GP-GPU

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The physically based animation of cloth has been researched for over two decades, since which it has become a common and convincing appearance in film. In real time applications such as video games, cloth simulations are starting to become common, but the simulations lag behind the standard set in CGI and literature. In particular, collisions are often neglected, especially self-collisions (where cloth hits cloth, or itself). The processes normally used to guarantee robust collision handling are poorly suited to the limitations of a real time application. This paper explores the viability of achieving robust cloth simulation in real time on the GPU.

A [Bridson et al., 2002] style pipeline is fully implemented on the GPU, and each part of the pipeline is benchmarked. An experiment is performed to discern the importance of thickness parameter (a distance within which collisions are registered) to performance. Further to this, a GPU design and partial implementation is discussed.