A Study of Deformation and Fracture in Virtual Environments

Daniel Walsh
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Supervisor: Michael Manzke

Real-time deformation and fracture have been an open area of research for over two decades, with many various approaches being explored in this time.

Shape matching is a simplified, position-based physics model, originally proposed over ten years ago that has proven viability in soft-body simulation that is also extensible to support fracturing of objects.

In this dissertation, I have taken an existing shape matching algorithm supporting ductile fracture and developed a highly parallel implementation that runs on both CPUs and GPUs and performed a thorough performance analysis to evaluate the solution and guide future work.