**Master’s Defense Announcement**

PARALLEL COLLISION DETECTION UTILIZING THE CUDA ARCHITECTURE AND DIRECTX 9

Presented By:

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Abstract

The main focus of this paper is the utilization of the graphics processing unit as a parallel co-processor in the area of collision detection. The objective of this research was to implement several algorithms on the GPU that would create collision detection structures and perform collision detection queries on a set of rigid objects in a 3D environment. A parallel implementation of a bounding volume hierarchy (BVH) tree for rigid objects is presented. The goal was to implement an efficient algorithm that could be executed in parallel and would achieve a minimum construction time. A minimal construction time would allow the BVH tree to be rebuilt every frame without a significant decrease in overall performance of the application. This per frame rebuild would allow the structure to be applied to both rigid and deformable objects with equal efficiency. Additionally a parallel implementation of a broad-phase collision detection scheme was planned. A partial implementation for collision detection is presented. An analysis of the partial implementation and suggestions for future work is discussed.

Committee Members:

G. Michael Barnes, chair
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Location:                  JD 4440