School of Computing

UNIVERSITY OF LEEDS

COMP5200M Project Specification

Student Name: Aayush Verma
Programme of Study: MSc. High Performance Graphics and Games Engg.
Supervisor Name: Dr. Hamish Carr
Name of External Company (if any)**:**
Type of Project: Exploratory Software
Provisional Title of Project: High Performance Volume Rendering.
Aim of Project: In scientific visualization, Volume Rendering is a set of techniques by means of which a 3D model dataset can be viewed on a screen, i.e. a 2D projection. Achieving interactive frame rates for rendering these large and unstructured model meshes is a major challenge. The aim of this project is to increase the efficiency and reduce the computational cost of rendering these unstructured 3D models by using combinations of existing volume rendering techniques and leveraging the modern hardware.

Objectives:

- Study Direct Volume Rendering.
- Explore various visualization techniques to render unstructured meshes.
- Analyse efficiencies of existing dynamic level-of-detail strategies and volume simplification pre-processing techniques.
- Take advantage of GPU's ray-tracing capabilities.
- Work out an efficient approach to render Unstructured Volumes.

Deliverables:

- Project Report
- Source Code for the implementation.