Abstract

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Optimization to Deferred Shading Pipeline

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Rendering pipelines in the field of graphics are continuously evolved. Deferred rendering pipeline is a step forward from most Common pipeline Forward rendering pipeline. Deferred rendering pipeline has its disadvantages such as its does not support blending.

The aim of this project is to optimize the deferred rendering pipeline to increase its usability for a large variety of project. One of the objectives of the project is to solve the problem of blending by integrating forward pass as the third pass into the deferred pipeline to render blending. Next, comes the Light volumes calculations to calculate lighting and increase computational efficiency.

After couple experiments and dealing with results of these experiments, blending is successfully integrated. It works efficiently and justifies deferred characteristics of rendering a large number of objects and lights. The results produced by blending implementation are realistic and efficient. Lights rendered to perform blending uses the distinctive shader. Light volume calculation approach is also successfully implemented.

However rendering performance improves but it does not hit the expected mark. The reason behind these results is due to GLSL and GPU characteristics. However, this can also be solved by the approach suggested in future work. This optimization of the deferred pipeline can be utilized to render a large number of objects and light while allowing the use of blending and special shader, which is something not possible in generic deferred shading. This approach also supports customizations and scalability depending on requirements of the project.