Global Illumination using Screen Space Directional Occlusion

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This project will investigate the complexity of implementing Screen Space Directional Occlusion (SSDO) and any possible improvements that can be incorporated from other research papers. It will focus on making a performance oriented solution to compliment the efficient nature of screen space techniques. This report details the project aims and the planned approach.

# Aim

My project aims to implement the SSDO to introduce Ambient Occlusion (AO) and Global Illumination (GI) for images rendered in real-time.

# Objectives

* Incorporate GI and AO using SSDO to an existing rendering solution with no such features.
* Identify the difficulties of implementing SSDO and adding it to an existing system.
* Investigate any potential extensions to the original SSDO paper [1].

# Plan

Currently I’m working on creating a simple rendering solution with shadow casting and capturing some performance data for analysis later on.

In the next step I will start implementing the SSDO as per the original paper [1] and capture the changes in performance data.

In the final stage of the project development I will look into other AO techniques like Horizon Based Ambient Occlusion (HBAO)[2] and Alchemy Ambient Occlusion (AAO)[3] to see if there are features that can be merged with the existing implementation while maintaining good performance.

Finalising the project in writing.

References:

[1] Ritschel, T., Grosch, T., & Seidel, H.-P. (2009). Approximating Dynamic Global Illumination in Image Space. *I3D*, (pp. 75-82).

[2] Bavoil L., Sainz M., Dimitrov R. (2008). Image-Space Horizon-Based Ambient Occlusion. SIGGRAPH

[3] McGuire M., Osman B., Bukowski M., Hennessy P. (2011). The Alchemy Screen-Space Ambient Obscurance Algorithm