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Interaction between Sunlight and the Sky Colour with 3D Objects in the Outdoor Virtual Environment

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Interaction between Sunlight and the Sky Colour with 3D Objects in the Outdoor Virtual Environment

Kota Kinabalu, Borneo, Malaysia May 26-May 28 ISBN: 978-0-7695-4062-7

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DOI Bookmark: http://doi.ieeecomputersociety.org/10.1109/AMS.2010.96

The sky has always been the crucial element in modeling the background of an outdoor scene. The position of the sun during the day gives a different impact on the sky colour. The sky colour indirectly affects the colour of the objects which were exposed to the lighting, such as the orangish red colour of the clouds seen during sunsets. Consequently, this study will emphasize on how to produce illuminated 3D objects based upon the effects of interaction between the sunlight and sky. A two-part program was developed for this study. The first part of the program concentrates on producing the correct sky colour depending on the position of the sun using Perez's function. The sky colour will be plotted on the sky dome which in turn will become a closed environment for the clouds. The interaction will occur in the second part of the program where the energy transfer in the dome environment with color of the sky as the main source illumination, resulting in the colour bleeding effect when using the radiosity approach. The result from this study is applicable to daylight modeling of building by showing the lighting effects from the sun and the sky.

Index Terms:

3D objects, Sun, Sky, Perez function, Radiosity

Citation:

Sami M. Halawani, Mohd Shahrizal Sunar, "Interaction between Sunlight and the Sky Colour with 3D Objects in the Outdoor Virtual Environment," ams, pp.470-475, 2010 Fourth Asia International Conference on Mathematical/Analytical Modelling and Computer Simulation, 2010

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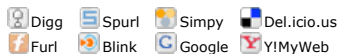
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