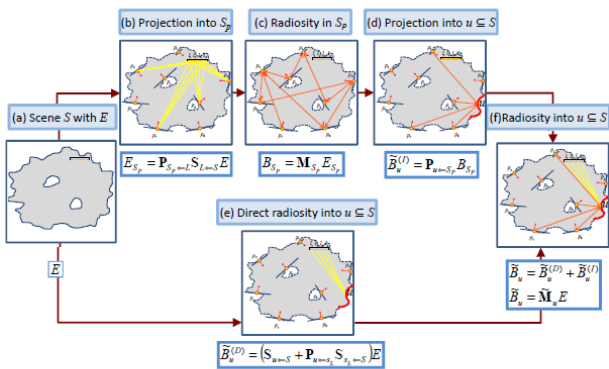


A Sample-Based Method for Computing the Radiosity Inverse Matrix

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The radiosity {problem} can be expressed as a linear system, where the {light transport} interactions of all patches of the scene are considered.

Due to the amount of computation required to solve the system, the whole matrix is rarely computed and iterative methods are used instead. In this paper we introduce a new algorithm to obtain an approximation of the radiosity inverse matrix.

The method is based on the calculation of a random sample of rows of the form factor matrix.

The availability of this matrix allows {us} to reduce the radiosity calculation costs, speeding up the radiosity process. This is useful in applications where the radiosity equation must be solved thousands of times for different light configurations.

We apply it to solve inverse lighting problems, in scenes up to 170K patches.

The optimization process used finds optimal solutions in nearly interactive times, which improves {on} previous work.