# Computer Graphics Bachelor Thesis Proposal

## *Light Sources Pre-sampling*

Ray-based rendering algorithms can shoot rays directly onto light sources to compute the direct illumination estimate. The simplest approach is to sample the whole light-emitting surface uniformly, but it generates a lot of unwanted noise in the resulting image. A better solution is to sample the more emissive parts of lights more often than the darker parts.

The goal of this thesis will be to design and implement a pre-processing analysis of light source surfaces in the scene using pre-sampling, and then to subdivide the surfaces into sub-parts which can be sampled uniformly. The student is encouraged to experiment with various pre-sampling strategies (uniform, adaptive) and provide an analysis of achieved results.

The main advantages of this work are straightforward problem formulation and an opportunity to work on a unique research rendering system. The language of the thesis will be English.

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