



**Workshop EPFL-Inria  
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**Title:** « Differentiable Path Tracing Algorithms for Optimizing Virtual Scenes »

**Abstract:**

Rendering algorithms such as path tracing are widely used for computing realistic images from virtual scenes. One can further improve the realism of rendered images by optimizing the parameters of the virtual scene, e.g., shape parameters or reflectance properties, using photos of real objects. The main challenge of this technique is the computation of the partial derivatives of pixel values with respect to the scene parameters that are optimized. Indeed, rendering a 3D scene requires evaluating functions with discontinuities that are typically due to occlusion between 3D objects in the scene, and such discontinuities make gradient computation very costly. In this talk, we will discuss new differentiable rendering algorithms that could help optimizing virtual scenes efficiently.