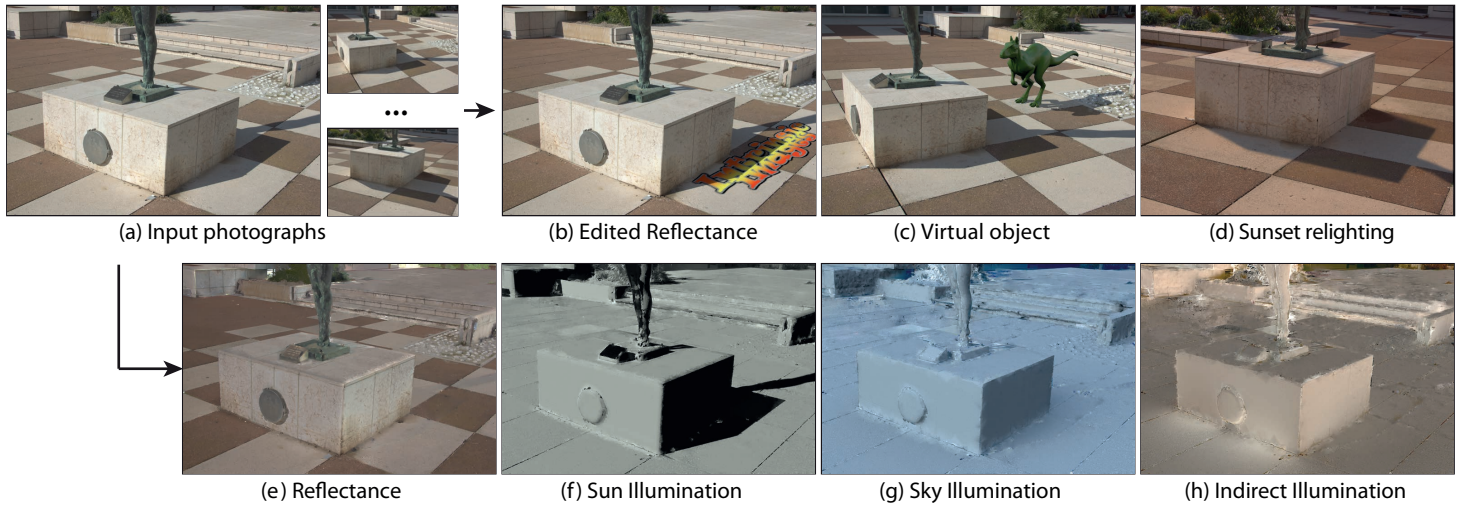


Rich Intrinsic Image Decomposition of Outdoor Scenes from Multiple Views

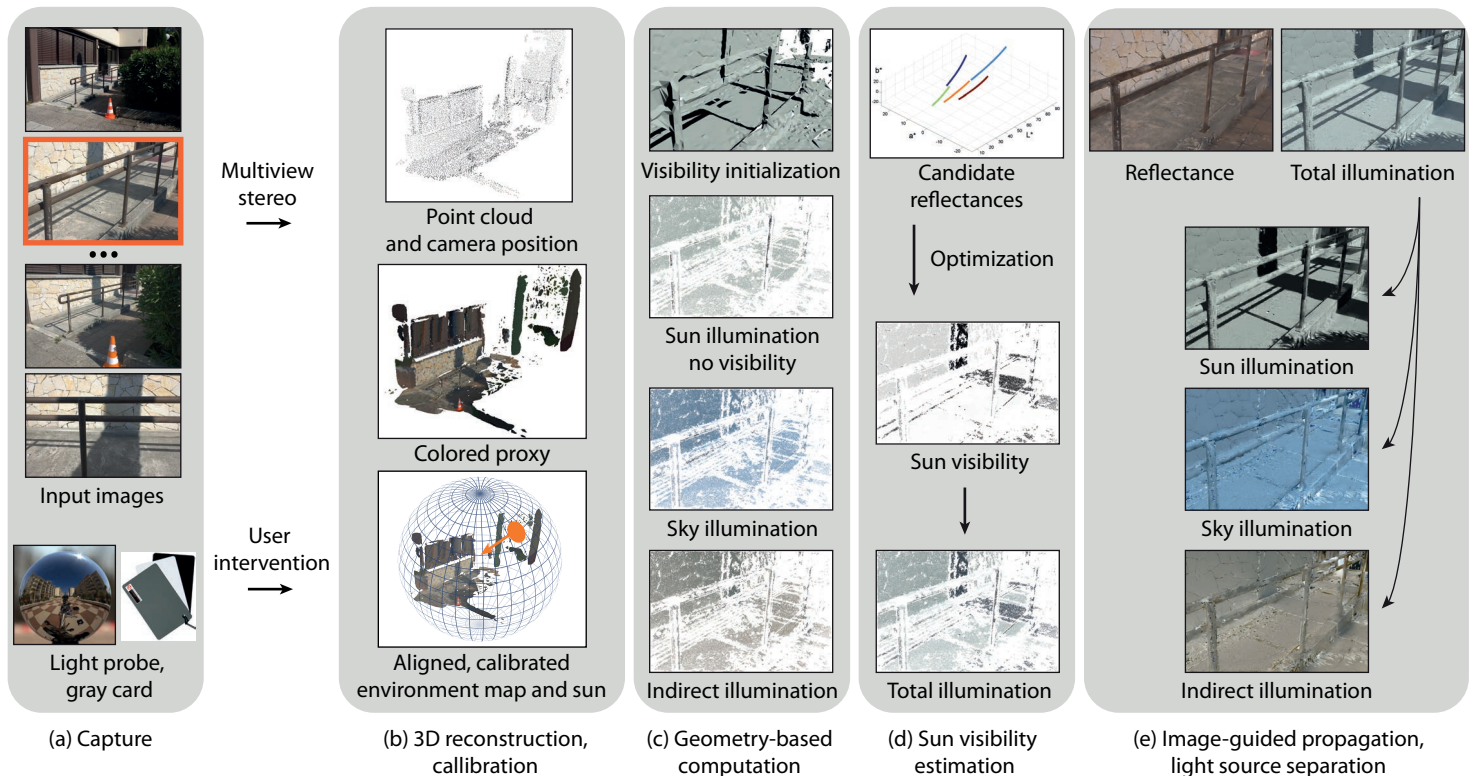
We will also present this work in the "Image Playground" session
Thursday 3:45 pm- 5:15 pm, Room 408A

Pierre-Yves Laffont,
Adrien Bousseau,
George Drettakis
REVES / Inria Sophia-Antipolis



Intrinsic images aim at separating an image into reflectance (e) and illumination layers (f-h) to facilitate analysis or manipulation. Most successful methods rely on user indications, precise geometry, or need multiple images from the same viewpoint and varying lighting to solve this severely ill-posed problem. We propose a method to estimate intrinsic images from multiple views of an outdoor scene at a single time of day without the need for precise geometry and with little manual calibration. Each intrinsic component can then be manipulated independently for advanced image editing applications (b-d).

Overview of our approach



Users capture a small set of pictures of the scene along with an environment map (a). We use multi-view stereo to reconstruct a 3D point cloud of the scene and a coarse geometry (b). We use the 3D reconstruction to compute sun, sky and indirect lighting over the point cloud (c). We then introduce an iterative optimization to estimate sun visibility at every point, despite the lack of precise geometry (d). The final step of our method consists in propagating the illumination values computed at 3D points to every pixel in the image (e). We decompose the propagated illumination into the sun, sky and indirect lighting components.

For more details, please refer to our publication in [IEEE Transactions on Visualization and Computer Graphics, 2012](#).

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