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Inverse Polarization Raytracing: Estimating Surface Shapes of Transparent Objects

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Objective

Purpose

→ Estimate the 3D surface shape of transparent objects

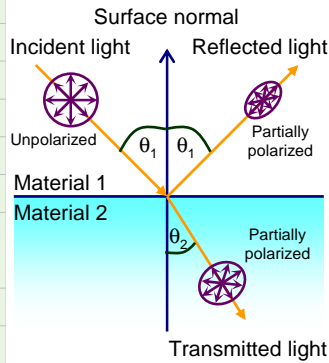
Input

→ 3 or more images of transparent object with different angle of the polarizer

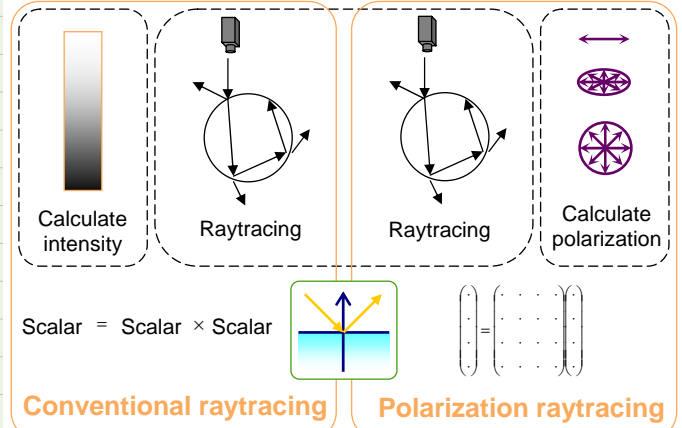
Output

→ One piece of height map of the frontal surface of transparent object

Polarization

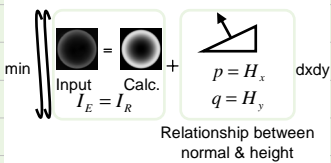


Raytracing



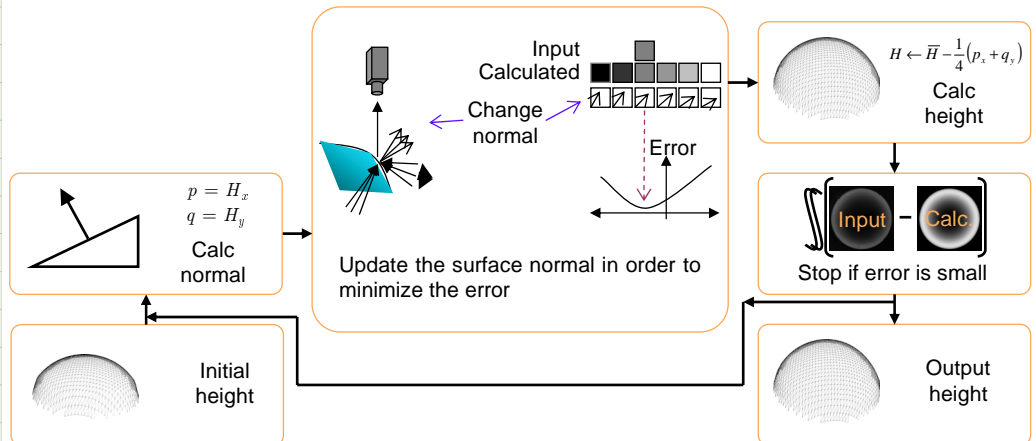
Error

Cost function

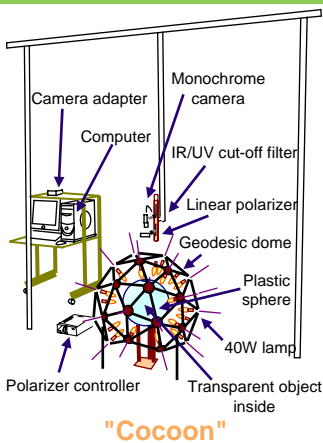


Calculate height and normal

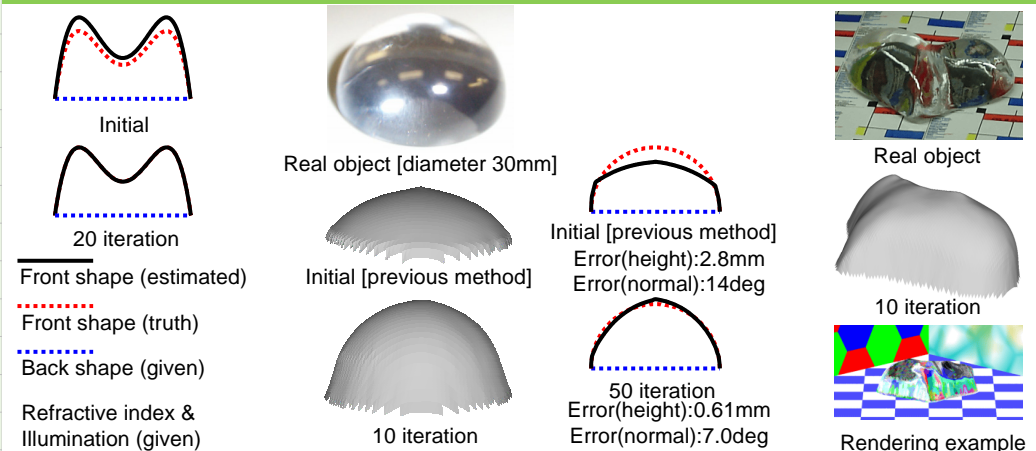
Algorithm



Setup



Results



Acknowledgement

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Presented Paper

[1]Daisuke Miyazaki, Katsushi Ikeuchi, "Inverse Polarization Raytracing: Estimating Surface Shapes of Transparent Objects," in Proceedings of International Conference on Computer Vision and Pattern Recognition, San Diego, CA USA, June 2005.
[2]宮崎大輔, 池内克史, "偏光レイレーシング法による透明物体の表面形状の推定手法," 電子情報通信学会論文誌 D-II, 2005年8月.