PhoCoLens: Photorealistic and Consistent Reconstruction in Lensless Imaging – Rebuttal
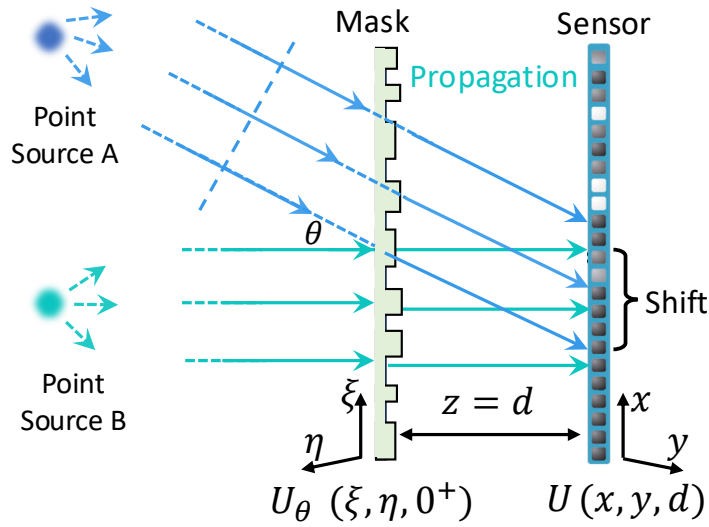

Figure a. Illustration of light propagation in a lensless camera: consider two point sources, A and B, located at infinity and emitting parallel incident light. Source A emits light at an angle θ relative to the optical axis, while source B emits light along the optical axis (angle 0). The light beam from point source A, entering at angle θ, induces a shift in the point spread function (PSF) on the sensor plane. This PSF shift depends on both the incident angle θ and the distance d between the sensor and the mask.
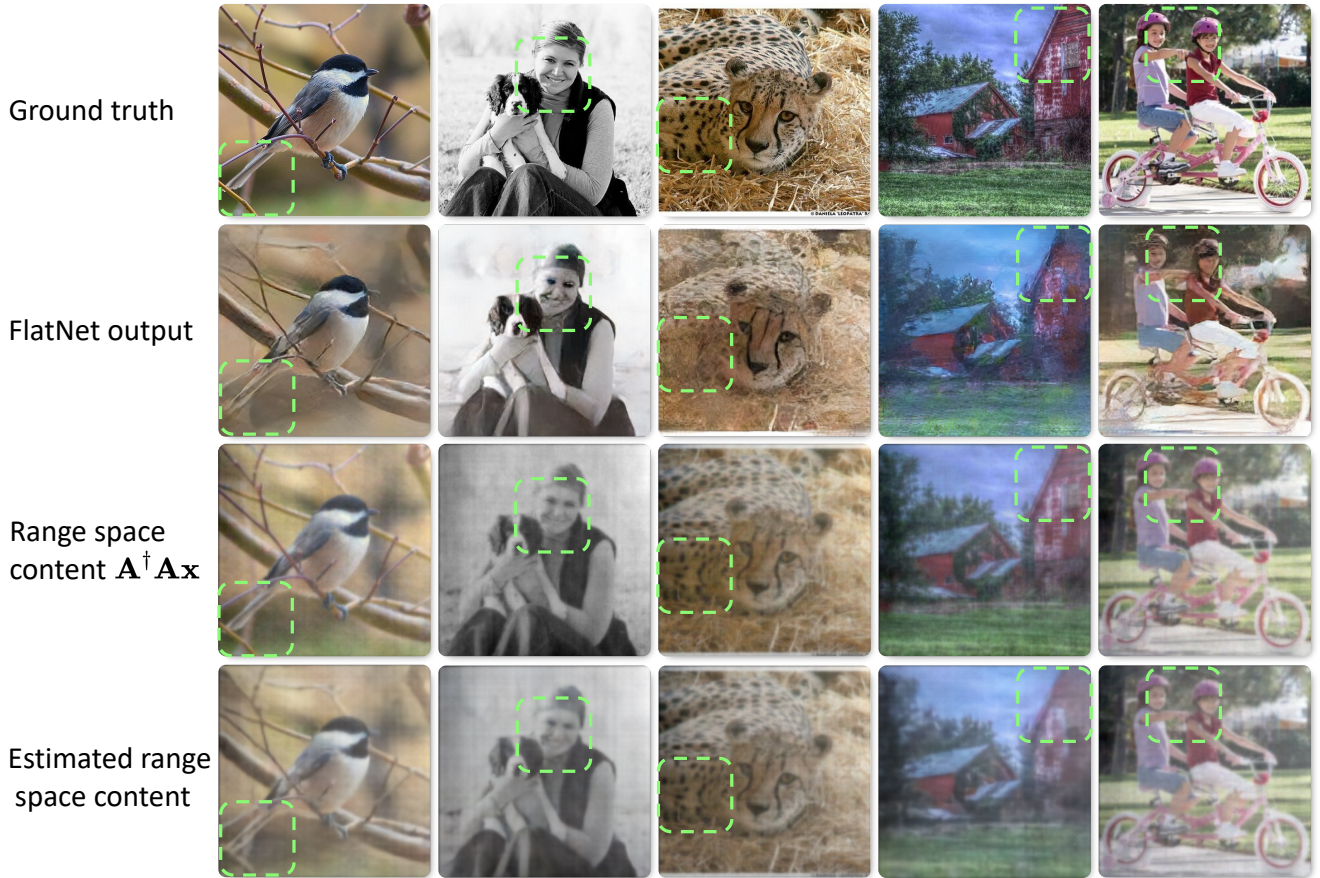

Figure b. Examples of range space content estimated by our method. The outputs from SVDeconv exhibit high visual consistency with the ground truth, as highlighted in the green boxes, in contrast to those from FlatNet. FlatNet alters the original scene's content and introduces incorrect high-frequency details. Conversely, our method preserves only the low-frequency content in the range space, aligning closely with the original ground truth.