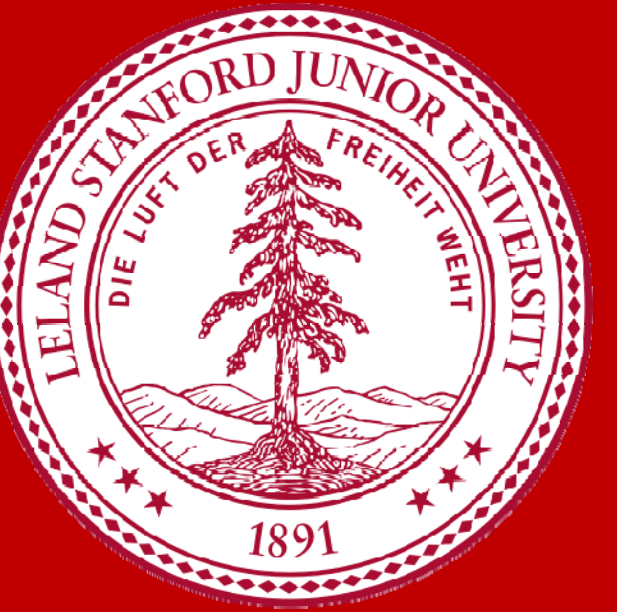


Fog Simulation and Refocusing from Stereo Images



Yifei Wang and Noam Weinberger
Department of Electrical Engineering, Stanford University

Motivation

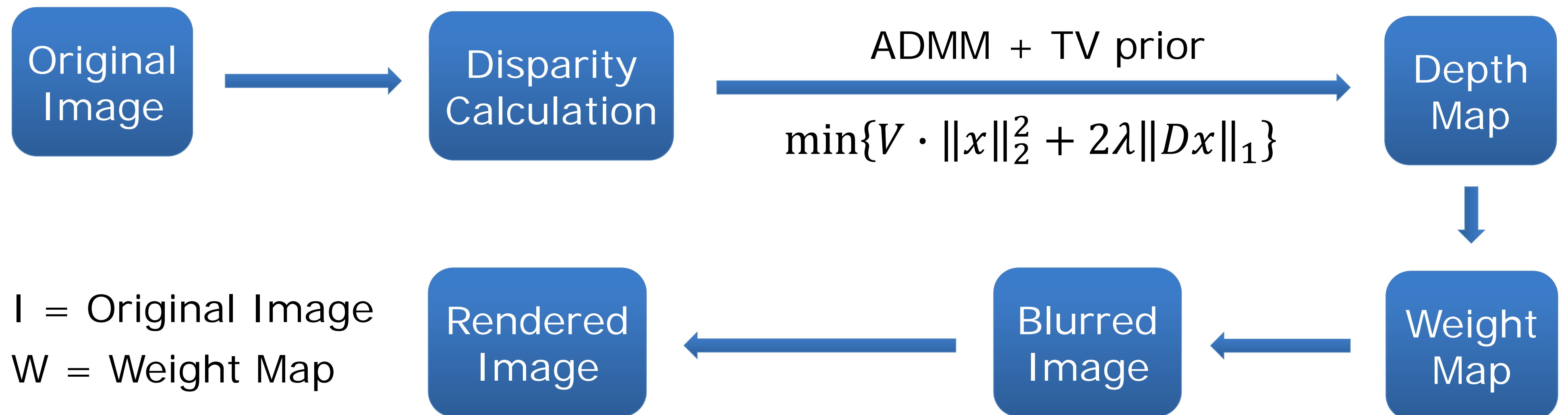
Accurate computer vision and scene rendering is needed for entertainment, automation, and other applications. One aspect of this is simulation of fog or smoke. Realistic fog simulation depends on the depth of objects in the scene, among other factors. In this project, we construct a pipeline to estimate depth, blur and brighten the target image, and use this to construct a foggy version.

Related Work

- Depth estimation based on multiple images or a video
- Fog simulation and rendering
- Dehazing based on single image



Pipeline

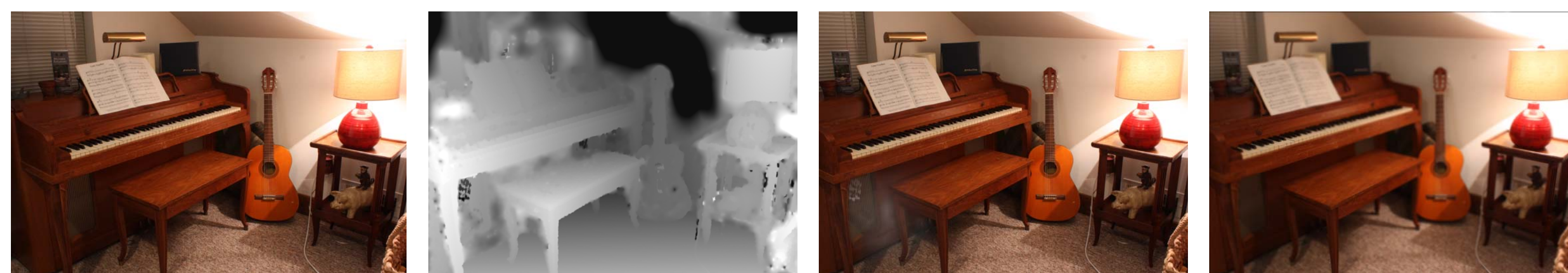
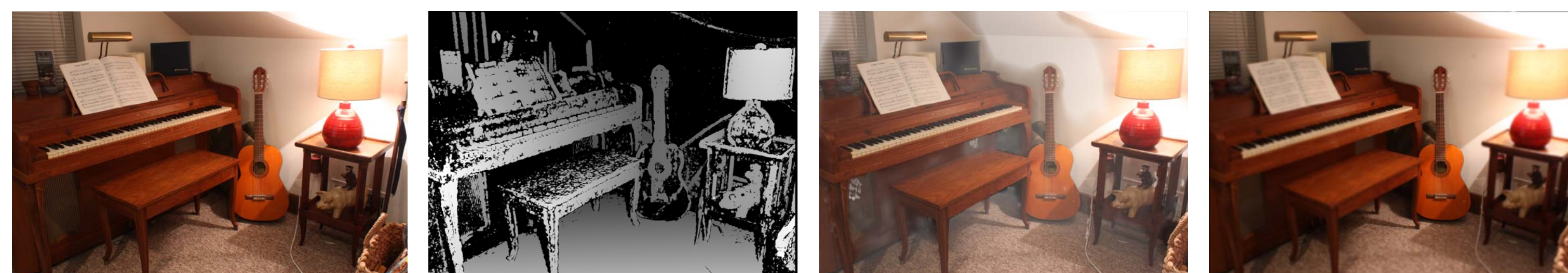


I = Original Image
 W = Weight Map
 B = Blurred Image
 C = Fog Constant

$$J(x) = I(x)[1 - W(x)] + [\alpha \cdot B(x) + (1 - \alpha) \cdot C] \cdot W(x)$$

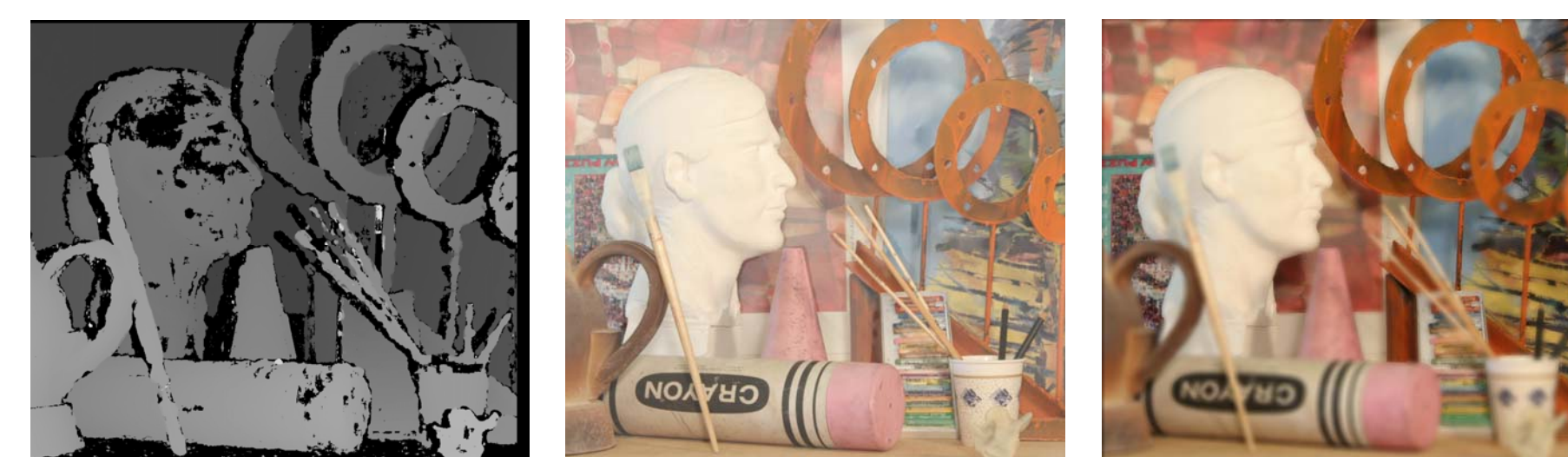
Demonstrations

Demo 1



Stereo Images Depth Map Smoke Local Source Different Focus

Demo 2



Demo 3: Given Depth Map

