



Fig. 9. All-focused image of another real scene (a), sample images in DFF set (b-d). Estimated depth image of the scene by our method (e), DFF using adaptive windows with ML focus measure and traditional DFF method with SML (g), LPC (h), and VAR (i) focus measures.

between the depth estimation methods. As a result, a robust fusion of depth values from focus and other depth estimation or shape from X methods becomes feasible.

One disadvantage of our method is the relatively higher computational requirements due to weight calculations. However this problem can be addressed by employing data structures like the bilateral grid [32]. In addition, the all-focused image requirement of our method increases the overall image acquisition time. However, increase in the time is not significant, because most of the time is used for changing focus settings and capturing images for DFF set. Another issue with the proposed method is the practical problems with all-focused image, which cannot be obtained equally sharp for the whole scene. Although we successfully address this problem by making a SML based small local search, other methods that would increase the sharpness of the all-focused image can be employed [33, 34].

Acknowledgements

This work was conducted at the Computer Vision Laboratory at Gebze Institute of Technology. It was supported by TUBITAK Career Project 105E097.