



The Effect of an Occluder on Near Field Depth Matching in Optical See-Through Augmented Reality

Chunya Hua*

Kenneth Moser*

J. Edward Swan II*

Mississippi State University

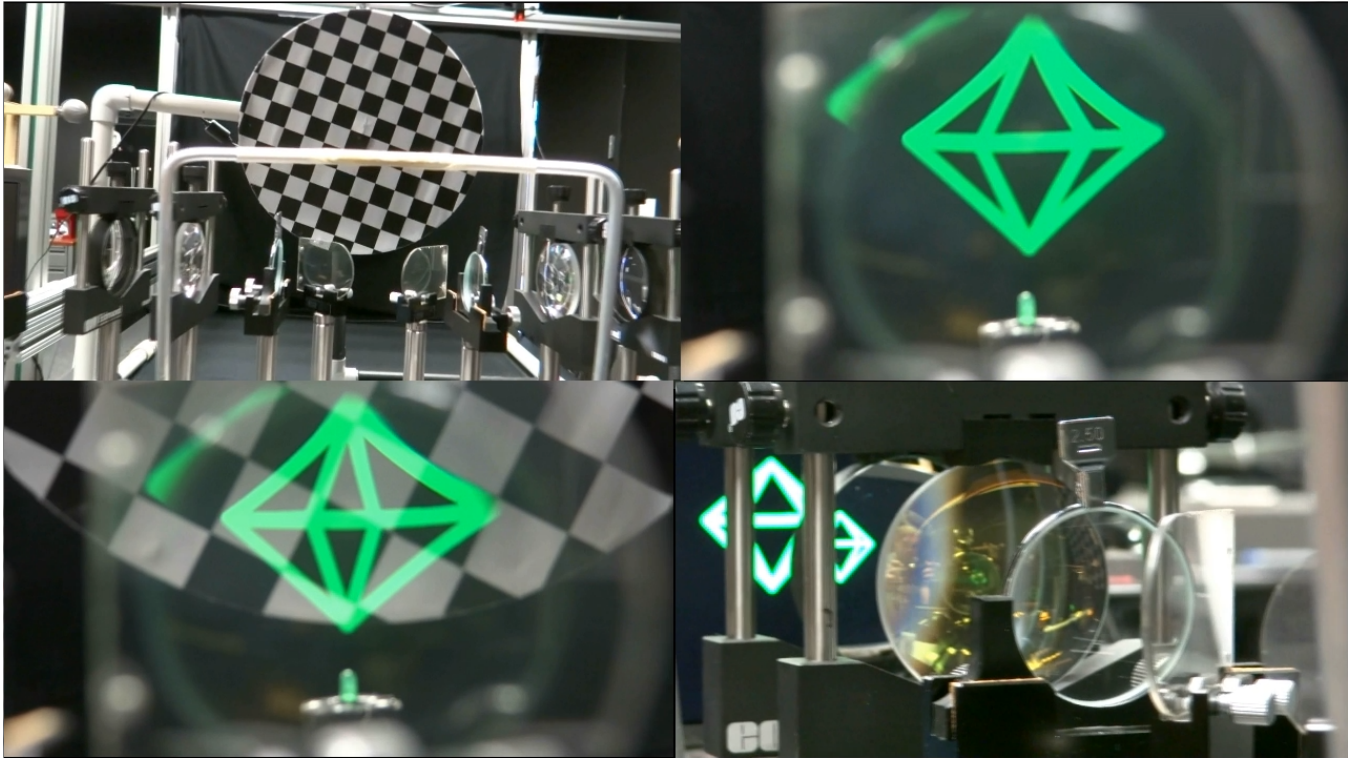


Figure 1: Views of the Haploscope hardware, the virtual pyramid, and the alignment indicator, green LED.

ABSTRACT

We have conducted an experiment to study the effect of an occluding surface on the accuracy of near field depth matching in augmented reality (AR). Our experiment was based on replicating a similar experiment conducted by Edwards et al. [2]. We used an AR haploscope [1], which allows us to independently manipulate accommodative demand and vergence angle of the visible image. Fifteen observers matched the perceived depth of an AR-presented virtual object with a physical pointer. Overall, observers overestimated depth by 5 mm or less in the presence of the occluder, while in the absence of an occluder they overestimated depth by 5 to 10 mm. The data from Edwards et al. [2] is normalized, and when we performed the same normalization procedure on our own data, our results do not agree with Edwards et al. [2]. We suspect that eye vergence explains these results.

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* Chunya Hua <ch1242@msstate.edu>,
Kenneth Moser <krm104@msstate.edu>,
J. Edward Swan II <swan@acm.org>