Poster

HDR Images for Binocular Vision Evaluation in the Perception of Architectural Space: A First Approach

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Introduction

Recent studies indicates that glare sources on a scene recorded in digital images can be easily detected, especially through the use of High Dynamic Range Imaging (HDRI) (VAN DEN WYMELENBERG *et al*, 2010). But current tools do not translate the human visual perception into something easily noticeable.

This poster presents a preliminary study, now in course at the University of Campinas, Brazil (Unicamp), that explores the possibilities of using HDRI as a qualitative indoor glare evaluation based on the human visual field.

Methodology

This study is divided into two parts: the capture and compilation of HDRI, and the preparation and analysis of visual field.

No special device or software was used, but only a SLR camera equipped with fisheye lenses and calibrated according to Jacobs (2007). A tripod and a computer remote control were used in order to stabilize the equipment and reduce the chance of errors in the HDR compiler.

After the compilation, the HDR image was opened in MATLAB. Using the basic library and the HDR Toolbox algorithms (BANTERLE *et al*. 2011), a routine was compiled to created a binocular visual field mask to superpose over the HDRI.

Evaluation and Discussion

The Fig. 1 shows one of the test shots, a workplace at the University. This HDRI shows that there are no major glare sources on the binocular field (e.g. the window is in the peripheral field).

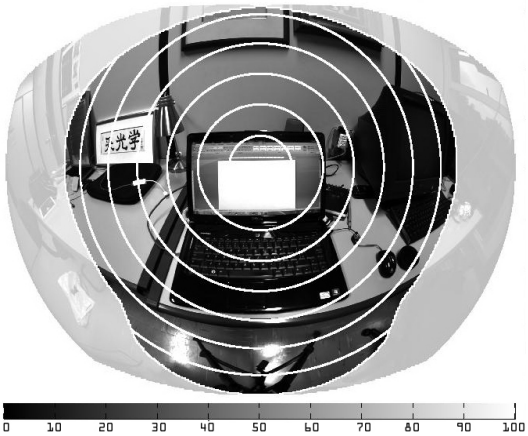

Fig. 1: HDRI, gray scaled from 0 to 100 cd/m²

Conclusion

This preliminary test shows that fisheye HDRI may be used to translate the human experience of contrast and glare perception. The superposition of the visual field made it easier to see the position of glare sources and to address its impact on vision.

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References

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