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Saarbrücken, August 2015 Mohamed Gad-Elrab

Abstract

Stereoscopic and automultiscopic displays suffer from crosstalk. An effect which greatly reduces image quality, viewer comfort and distort the perception of depth. Previously, only a limited work has been done on understanding the relation between crosstalk and the perceived depth with respect to the nature of the stimuli. Moreover most of the previous work is carried on simple monochromatic scenes. Since the human visual system uses numerous other cues than disparity to estimate the depth of an object in a stereo scene, monochromatic scenes are poor choice for understanding the above mentioned relation. Moreover, the model for depth resolution via disparity as provided by the current literature fails to justify why and how the perceived depth is affected by the crosstalk. In this work, we improved and performed more generalized experimentation to see how the depth perception is affected by the crosstalk for different kinds of stimuli. Based on the result of these experiments, we derived a model for human visual system's resolution of depth from disparity that accurately measures the depth of a stimulus as perceived by the human in presence of cross-talk. Finally some improved algorithms for removal/compensation of crosstalk in automultiscopic are developed.

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Introduction

1.1 Preliminaries

Discuss General idea behind crosstalk and why is it so bad. How it affects the depth and what current literature think about it.

1.2 Contributions of this Thesis

Experimentation, mitigation, HVS model.

test

1.3 Structure

1.4 List of Commonly used abbreviations

Chapter 2

Relevant Background

2.1 Stereopsis in HVS

Limits of stereopsis and that other paper of bank. cormack paper. when fusion and happens and when not and why?

2.2 Crosstalk

Definitions and Factors contributing to Crosstalk Effects on viewers 70% thing etc.

2.3 Stereoscopic/Automultiscopic Screens and its cross-talk

2.3.1 CRT Screens

2.3.2 LCD Screens

2.3.3 Anaglyph Stereo

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