Three Dimensional Imaging in a Two Dimensional Domain without the Use of 3-D or Special Glasses: An Experiment to Determine if Increasing Switching Speeds and Vertical Displacement between Alternating Stereoscopic Images Will Further Enhance 3-D Depth Perception.

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The hypothesis for this experiment is if a human views alternating stereoscopic video images displayed in a two-dimensional domain, such as a television screen or computer monitor at increased switching speeds, then viewers will see more enhanced 3-D depth perception than is perceived at lower switching speeds and if the cameras are displaced vertically, rather than horizontally, then the viewers will still see enhanced 3-D depth perception without the aid of 3-D or special glasses, because the human brain will interpret and blend the separate, but alternating independent 2-D images to create one 3-D stereo image without the need for 3-D or special viewing glasses and faster switching speeds will further enhance 3-D depth perception. The procedures included taking stereoscopic videotapes of images that were displayed in an alternating fashion at different, and increasing switching speeds, for ten test subjects, who then rated their ability to see enhanced 3-D depth and natural appearance. The results of the experiment supported the conclusion that increasing switching speeds from four to approximately eight, to ten switches per second, generally improved 3-D depth perception. When increasing the switching speeds from 10 to 15 switches per second, depth enhancement, natural appearance, and viewing comfort was further optimized for most viewers, however, 20% of the viewers described marginal or diminishing 3-D depth and lower levels of natural appearance and viewing comfort. Vertical displacement of the stereoscopic cameras resulted in improved 3-D viewing comfort when viewing vertical subjects, such as tall trees and buildings.

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