Preferred Character Size for Oblique Angles

Authors : Photjanat Phimnom, Haruetai Lohasiriwat

Abstract : In today's world, the LED display has been used for presenting visual information under various circumstances. Such information is an important intermediary in the human information processing. Researchers have been investigated diverse factors that influence this process effectiveness. The letter size is undoubtedly one major factor that has been tested and recommended by many standards and guidelines. However, viewing information on the display from direct perpendicular position is a typical assumption whereas many actual events are required viewing from the angles. This current research aims to study the effect of oblique viewing angle and viewing distance on ability to recognize alphabet, number, and English word. The total of ten participants was volunteered to our 3 x 4 x 4 within subject study. Independent variables include three distance levels (2, 6, and 12 m), four oblique angle (0, 45, 60, 75 degree), and four target types (alphabet, number, short words, and long words). Following the method of constant stimuli we found that the larger oblique angle, ranging from 0 to 75 degree from the line of sight, results in significant higher legibility threshold or larger font size required (p-value < 0.05). Viewing distance factor also shows to have significant effect on the threshold (p-value < 0.05). However, the effect from distance factor is expected to be confounded by the quality of the screen we used in our experiment. Lastly, our results show that single alphabet as well as single number are recognized at significant lower threshold (smaller font size) as compared to both short and long words (p-value < 0.05). Therefore, it is recommended that when designs information to be presented on LED display, understanding of all possible ranges of oblique angle should be taken into account in order to specify the preferred letter size. Additionally, the recommendation of letter size for 100 % readability in our tested conditions is provided in the paper.

Keywords : letter size, oblique angle, viewing distance, legibility threshold
Conference Title : ICIE 2014 : International Conference on Industrial Engineering
Conference Location : Bangkok, Thailand
Conference Dates : December 18-19, 2014