

Factor Study Affecting Visual Awareness on Dynamic Object Monitoring

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Abstract : As applied to dynamic monitoring situations, the prevailing approach to situation awareness (SA) assumes that the relevant areas of interest (AOI) be perceived before that information can be processed further to affect decision-making and, thereafter, action. It is not entirely clear whether this is the case. This study seeks to investigate the monitoring of dynamic objects through matching eye fixations with the relevant AOIs in boundary-crossing scenarios. By this definition, a match is where a fixation is registered on the AOI. While many factors may affect monitoring characteristics, traffic simulations were designed in this study to explore two factors, namely: the number of inbound/outbound traffic transfers and the number of entry and/or exit points in a radar monitoring sector. These two factors were graded into five levels of difficulty ranging from low to high traffic flow numbers. Combined permutation in terms of levels of difficulty of these two factors yielded a total of thirty scenarios. Through this, results showed that changes in the traffic flow numbers on transfer resulted in greater variations having match limits ranging from 29%-100%, as compared to the number of sector entry/exit points of range limit from 80%-100%. The subsequent analysis is able to determine the type and combination of traffic scenarios where imperfect matching is likely to occur.

Keywords : air traffic simulation, eye-tracking, visual monitoring, focus attention

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