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Display Resolution, Visual Perception, and Simulated Aircraft Aspect

Several studies have been undertaken at DRDC to assess influences on the visual perception of aircraft orientation and roll rate. These factors include: visual display resolution, simulated distance, aircraft orientation, aircraft roll rate, and aircraft type. Two experiments were performed on conventional visual displays at DRDC Toronto and on a laser-based display at AFRL Mesa. Performance on these tasks was measured for both naive subjects and for experienced fast-jet pilots. Visual display resolution had a significant impact on the simulated distance at which accurate judgments could be made of both orientation and roll. Errors in estimate on one dimension of orientation were affected by the value of other dimensions. For instance, errors in estimate of roll differed significantly across conditions of distance, and also with pitch and aspect.

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