

A Cybernetic Approach to Assess Flight Simulator Motion Fidelity [★]

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Abstract: Due to a limited understanding of human multimodal motion perception during aircraft control, the definition of requirements for flight simulator motion fidelity is a problem the flight simulation community has struggled with for years. The development of adequate tuning procedures for motion washout algorithms has remained problematic for the same reason. This paper proposes a method for assessment of simulator motion fidelity that makes use of a cybernetic, model-based approach to measuring multimodal pilot control behavior. As illustrated here with data from a recent human-in-the-loop experiment, this approach allows for objective detection of changes in pilot control that result from degraded simulator motion fidelity.

Keywords: manual control, pilot-vehicle systems, flight simulation, motion cueing
