

PERCEPTION MODELING FOR AIRCRAFT ACCIDENT INVESTIGATION

Summary

The goal of this effort is to develop a mathematical model of human spatial orientation perception and to determine, based on prior modeling efforts and experimental research, the general utility of the model in predicting spatial disorientation events and analyzing aircraft mishaps and accident scenarios.

Objectives

- Build, program and test past vestibular modeling efforts (i.e. Merfeld 1993, Zupan 2002, Vingerhoets 2007, Haselvanter 2001 etc.)
- Compare and validate each model's response to common experimental vestibular stimuli (i.e. Forward linear acceleration, constant velocity yaw rotation, off vertical axis rotation, post-rotational tilt, fixed and variable radius centrifugation etc.)
- Develop a GUI based analysis tool that unifies the input/output stream of the abovementioned perception models and allows simultaneous simulation and comparison between models

Customer/Partner

USARMY Air force Research Laboratory

Status

Final Report complete (August 2012) and under review by USARMY Aeromedical Research Laboratory

Future Publications

Technical Report to the USARMY Air force Research Laboratory
American Institute of Aeronautics and Astronautics (AIAA)