



technology opportunity

Real-time Correction of Aircraft Flight Configuration

A Display System Shows Values That Describe an Aircraft Flight Route



Researchers at NASA have developed a system and associated method for detecting one or more chemical precursors (components) of a multi-component explosive compound.

A display system was developed for energy, location, and orientation analysis of an aircraft in motion. This innovation is applicable to analyses of values that describe an aircraft flight route (e.g., kinetic energy, potential energy, ascent rate, descent rate, angle of attack), and that compare these flight variables to nominally correct values of the corresponding variables. A first recovery band is determined, surrounding a nominally correct flight variable as a function of time; a flight variable value within this first band can recover to the nominally correct value within 2 to 15 s. The aircraft performance constraints are optionally expressed in terms of one or more constrained differential equations involving relevant time derivatives of flight parameter values. Where recovery to a reference flight parameter value is not possible within the recovery time interval, the system optionally provides one or more alternative responses for the pilot in command recovery band (RB). A recovery band can be generated and provided before the RB is used, or can be generated at the time of its use.

Technology in Detail

A second recovery band is also determined, surrounding the nominally correct flight variable as a function of time; a flight variable lying outside this second band cannot recover to the nominally correct flight variable value within the recovery time interval. Given $N(\geq 2)$ spaced apart values of the flight variable of interest, a forward prediction of the flight variable value is determined and used to define the primary and secondary bands. A flight variable value lying outside the second recovery band can correspond to a dangerous situation, and the pilot in command can be notified immediately, allowing him or her to take appropriate action to change the present value of this flight variable.

Patents

This technology has been patented (U.S. Patent 7,561,946).

Licensing and Partnering Opportunities

This technology is part of NASA's Innovative Partnerships Program, which seeks to transfer technology into and out of NASA to benefit the space program and U.S. industry. NASA invites companies to inquire about licensing possibilities for this technology for commercial applications.

For More Information

If you would like more information about this technology, please contact:

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