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A Generic Guidance and Control Structure for Six-Degree-Of-Freedom Conceptual Aircraft Design

By -

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 30 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. A control system framework is presented for both real-time and batch six-degree-of-freedom simulation. This framework allows stabilization and control with multiple command options, from body rate control to waypoint guidance. Also, pilot commands can be used to operate the simulation in a pilot-in-the-loop environment. This control system framework is created by using direct vehicle state feedback with nonlinear dynamic inversion. A direct control allocation scheme is used to command aircraft effectors. Online B-matrix estimation is used in the control allocation algorithm for maximum algorithm flexibility. Primary uses for this framework include conceptual design and early preliminary design of aircraft, where vehicle models change rapidly and a knowledge of vehicle six-degree-of-freedom performance is required. A simulated airbreathing hypersonic vehicle and a simulated high performance fighter are controlled to demonstrate the flexibility and utility of the control system. This item ships from La Vergne, TN. Paperback.



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