Aircraft Control Allocation
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DESCRIPTION

Aircraft Control Allocation

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An authoritative work on aircraft control allocation by its pioneers

Aircraft Control Allocation addresses the problem of allocating supposed redundant flight controls. It provides introductory material on flight dynamics and control to provide the context, and then describes in detail the geometry of the problem. The book includes a large section on solution methods, including 'Banks' method', a previously unpublished procedure. Generalized inverses are also discussed at length. There is an introductory section on linear programming solutions, as well as an extensive and comprehensive appendix dedicated to linear programming formulations and solutions. Discrete-time, or frame-wise allocation, is presented, including rate-limiting, nonlinear data, and preferred solutions.
Key features:

- Written by pioneers in the field of control allocation.

- Comprehensive explanation and discussion of the major control allocation solution methods.

- Extensive treatment of linear programming solutions to control allocation.

- A companion web site contains the code of a MATLAB/Simulink flight simulation with modules that incorporate all of the major solution methods.

- Includes examples based on actual aircraft.

The book is a vital reference for researchers and practitioners working in aircraft control, as well as graduate students in aerospace engineering.

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**ABOUT THE AUTHOR**

Wayne Durham had a full career as a U.S. Navy fighter pilot and test pilot. He is a member of the Society of Experimental Test Pilots. After retiring from the Navy he earned a Ph.D. in Aerospace Engineering at Virginia Tech, researching model-following control under the guidance of the late Fred Lutze. He remained at Virginia Tech teaching aerospace engineering and researching aircraft control, including seminal studies of control allocation.

After earning his Ph.D. from Virginia Tech, Ken Bordignon spent eight years at for Lockheed Martin working on various Advanced Development Projects, including the Joint Strike Fighter Concept Demonstration Aircraft, the X-35. Since 2008 he has taught at Embry-Riddle Aeronautical University in Prescott, Arizona.

Roger Beck has worked as a support contractor providing flight mechanics, simulation, guidance, navigation, and control support to NASA for a variety of aerospace projects. As part of his graduate work at Virginia Tech, Dr. Beck studied the extension of control allocation techniques to systems with more than three objectives. Working with NASA, he has supported flight tests of a variety of different vehicles including UAV flight systems, atmospheric tests of launch vehicles, hypersonic vehicles, even earth and planetary
re-entry systems. In addition to flight projects, Dr. Beck provides analytical support to a variety of conceptual studies ranging
ground test infrastructure to space technology demonstration missions. Currently, Dr. Beck is employed by Dynamic Concepts,
Incorporated of Huntsville, Alabama, working as part of the Flight Mechanics team for the SLS launch vehicle at NASA's Marshall
Space Flight Center.

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