

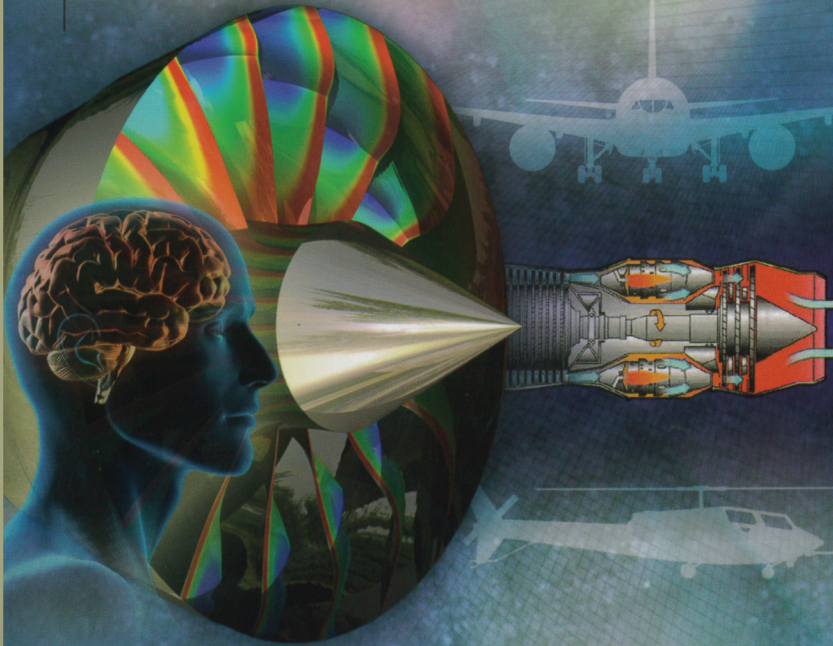
AIRCRAFT ENGINE CONTROLS

DESIGN, SYSTEM ANALYSIS, AND HEALTH MONITORING

Link C. Jaw

with

Jack D. Mattingly



American Institute of
Aeronautics and Astronautics

AIAA EDUCATION SERIES

JOSEPH A. SCETZ
EDITOR-IN-CHIEF

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ABOUT THE BOOK

This book covers the design of engine control and monitoring systems, with a dual interest in both turbofan and turboshaft engines. It focuses on four areas of interest: 1) modeling of engine dynamics, 2) application of specific control design methods to gas turbine engines, 3) advanced control concepts, and 4) engine condition monitoring.

While the material in this book is applicable to all air, land, and sea-based gas turbines, the majority of the book is concerned with aviation gas turbines. The emphasis is on aviation gas turbine controls because it is believed that most of the issues in the control design of other gas turbine control systems will be included in the substantial challenges inherent in aviation gas turbine control designs. The book is intended to provide a one-stop resource for understanding the design of modern turbine engine control and monitoring systems. Because gas turbine engine control and monitoring systems have successfully employed applications of nonlinear control and system health management, this book can also be used as a reference for the engineers and researchers who are designing control and monitoring systems for other industrial equipment and systems.

The book is based on a course on gas turbine engine controls developed and taught by Dr. Jaw and Dr. Mattingly during 2005–2007 to Air Force, Navy, and Army engineers. In addition to six chapters on engine control analysis and design, chapters are included on integration with aircraft systems, advanced engine control concepts, and engine monitoring and health management.



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1801 Alexander Bell Drive, Suite 500
Reston, VA 20191-4344 USA

Web site: www.aiaa.org

ISBN: 978-1-60086-705-7

ISBN 978-1-60086-705-7 \$99.95



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