1. Record Nr. UNINA9910139507203321 Autore Allerton David Titolo Principles of flight simulation / / David Allerton Pubbl/distr/stampa Chichester, : Wiley, 2009 **ISBN** 1-282-35491-4 9786612354915 0-470-68566-2 0-470-68219-1 Descrizione fisica 1 online resource (501 p.) Collana Aerospace series Disciplina 629.132/52078 629.13252078 Flight simulators Soggetti Aeronautics - Research Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Note generali Description based upon print version of record. Nota di bibliografia Includes bibliographical references and index. Nota di contenuto Principles of Flight Simulation; Contents; About the Author; Preface; Glossary; 1 Introduction; 1.1 Historical Perspective; 1.1.1 The First 40 Years of Flight 1905-1945; 1.1.2 Analogue Computing, 1945-1965; 1.1.3 Digital Computing, 1965-1985; 1.1.4 The Microelectronics Revolution, 1985-present; 1.2 The Case for Simulation; 1.2.1 Safety; 1.2.2 Financial Benefits; 1.2.3 Training Transfer; 1.2.4 Engineering Flight Simulation; 1.3 The Changing Role of Simulation; 1.4 The Organization of a Flight Simulator; 1.4.1 Equations of Motion; 1.4.2 Aerodynamic Model; 1.4.3 Engine Model 1.4.4 Data Acquisition1.4.5 Gear Model; 1.4.6 Weather Model; 1.4.7 Visual System; 1.4.8 Sound System; 1.4.9 Motion System; 1.4.10 Control Loading; 1.4.11 Instrument Displays; 1.4.12 Navigation Systems: 1.4.13 Maintenance: 1.5 The Concept of Real-time Simulation: 1.6 Pilot Cues; 1.6.1 Visual Cueing; 1.6.2 Motion Cueing; 1.7 Training versus Simulation; 1.8 Examples of Simulation; 1.8.1 Commercial Flight Training; 1.8.2 Military Flight Training; 1.8.3 Ab Initio Flight Training; 1.8.4 Land Vehicle Simulators; 1.8.5 Engineering Flight Simulators;

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## Sommario/riassunto

Principles of Flight Simulation is a comprehensive guide to flight simulator design, covering the modelling, algorithms and software which underpin flight simulation. The book covers the mathematical modelling and software which underpin flight simulation. The detailed equations of motion used to model aircraft dynamics are developed and then applied to the simulation of flight control systems and navigation systems. Real-time computer graphics algorithms are developed to implement aircraft displays and visual systems, covering OpenGL and OpenSceneGraph. The book also covers technique