1. Record Nr. UNINA9910823242503321

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Titolo	Principles of GNSS, inertial, and multisensor integrated navigation systems / / Paul D. Groves
Pubbl/distr/stampa	Boston, : Artech House, c2008
ISBN	1-5231-4639-7 1-58053-262-4
Edizione	[1st ed.]
Descrizione fisica	1 online resource (522 p.)
Collana	GNSS technology and applications series
Disciplina	629.045
Soggetti	Artificial satellites in navigation Inertial navigation systems
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	What is Navigation? -- Inertial Navigation -- Radio and Satellite Navigation -- Feature Matching -- The Complete Navigation System -- Navigation Mathematics -- Coordinate Frames, Kenematics, and the Earth -- Coordinate Frames -- Kinematics -- Earth Surface and Gravity Models -- Frame Transformations -- The Kalman Filter -- Introduction -- Algorithms and Models -- Implementation Issues -- Extensions to the Kalman Filter -- Navigation Systems -- Inertial Sensors -- Accelerometers -- Gyroscopes -- Inertial Measurement Units -- Error Characteristics -- Inertial Navigation -- Inertial-Frame Navigation Equations -- Earth-Frame Navigation Equations -- Local-Navigation-Frame Navigation Equations -- Navigations Equations Precision -- initialization and Alignment -- INS Error Propagation -- Platform INS -- Horizontal-Plane Inertial Navigation -- Satellite Navigation Systems -- Fundamentals of Satellite Navigation -- Global Positioning System -- GLONASS -- Galileo -- Regional Navigation Systems -- GNSS Interoperability -- Satellite Navigation Processing, Errors, and Geometry -- Satellite Navigation Geometry -- Receiver Hardware and Antenna -- Ranging Processor -- Range Error Sources -- Navigation Processor -- Advanced Satellite Navigation -- Differential GNSS -- Carrier-Phase Positioning and Attitude -- Poor Signal-to-Noise Environments -- Multipath Mitigation -- Signal Monitoring -- Semi-Codeless Tracking -- Terrestrial Radio Navigation -- Point-Source Systems -- Loran --

Instrument Landing System -- Urban and Indoor Positioning -- Relative Navigation -- Tracking -- Sonar Transponders -- Dead Reckoning, attitude, and Height Measurement -- Height and Depth Measurement -- Odometers -- Pedestrian Dead Reckoning -- Doppler Radar and Sonar -- Other Dead-Reckoning Techniques -- Feature Matching -- Terrain-Referenced NAvigation -- Image Matching -- Map Matching -- Other Feature-Matching Techniques -- Integrated Navigation -- INS/GNSS Integration -- Integration Architectures -- System Model and State Selection -- Measurement Models -- Advanced INS/GNSS Integration -- INS Alignment and Zero Velocity Updates -- Transfer Alignment -- Quasi-Stationary Alignment with Unknown Heading -- Quasi-Stationary Fine Alignment and Zero Velocity Updates -- Multisensor Integrated Navigation -- Integration Architectures -- Terrestrial Radio Navigation -- Dead Reckoning, Attitude, and Height Measurement -- Feature Mapping -- Fault Detection and Integrity Monitoring -- Failure Modes -- Range Checks -- Kalman Filter Measurement Innovations -- Direct Consistency Checks -- Certified Integrity Monitoring -- Vectors and Matrices -- Introduction to Vectors -- Introduction to Matrices -- Special Matrix Types -- Matrix Inversion -- Calculus -- Statistical Measures -- Mean, Variance, and Standard Deviation -- Probability Density Function -- Gaussian Distribution -- Chi-Square Distribution.

Sommario/riassunto

Navigation systems engineering is a red-hot area. More and more technical professionals are entering the field and looking for practical, up-to-date engineering know-how. This single-source reference answers the call, providing both an introduction to overall systems operation and an in-depth treatment of architecture, design, and component integration. This book explains how satellite, on-board, and other navigation technologies operate, and it gives practitioners insight into performance issues such as processing chains and error sources. Providing solutions to systems designers and engineers, the book describes and compares different integration architectures, and explains how to diagnose errors. Moreover, this hands-on book includes appendices filled with terminology and equations for quick referencing.