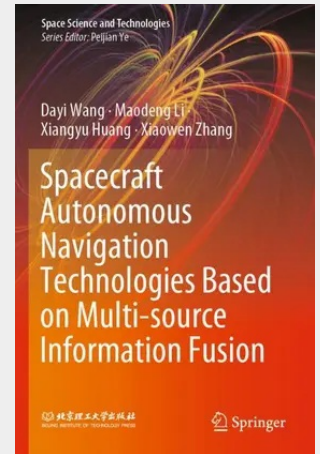


Spacecraft Autonomous Navigation Technologies Based on Multi-source Information Fusion

This book introduces readers to the fundamentals of estimation and dynamical system theory, and their applications in the field of multi-source information fused autonomous navigation for spacecraft. The content is divided into two parts: theory and application. The theory part (Part I) covers the mathematical background of navigation algorithm design, including parameter and state estimate methods, linear fusion, centralized and distributed fusion, observability analysis, Monte Carlo technology, and linear covariance analysis. In turn, the application part (Part II) focuses on autonomous navigation algorithm design for different phases of deep space missions, which involves multiple sensors, such as inertial measurement units, optical image sensors, and pulsar detectors. By concentrating on the relationships between estimation theory and autonomous navigation systems for spacecraft, the book bridges the gap between theory and practice. A wealth of helpful formulas and various types of estimators are also included to help readers grasp basic estimation concepts and offer them a ready-reference guide.

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