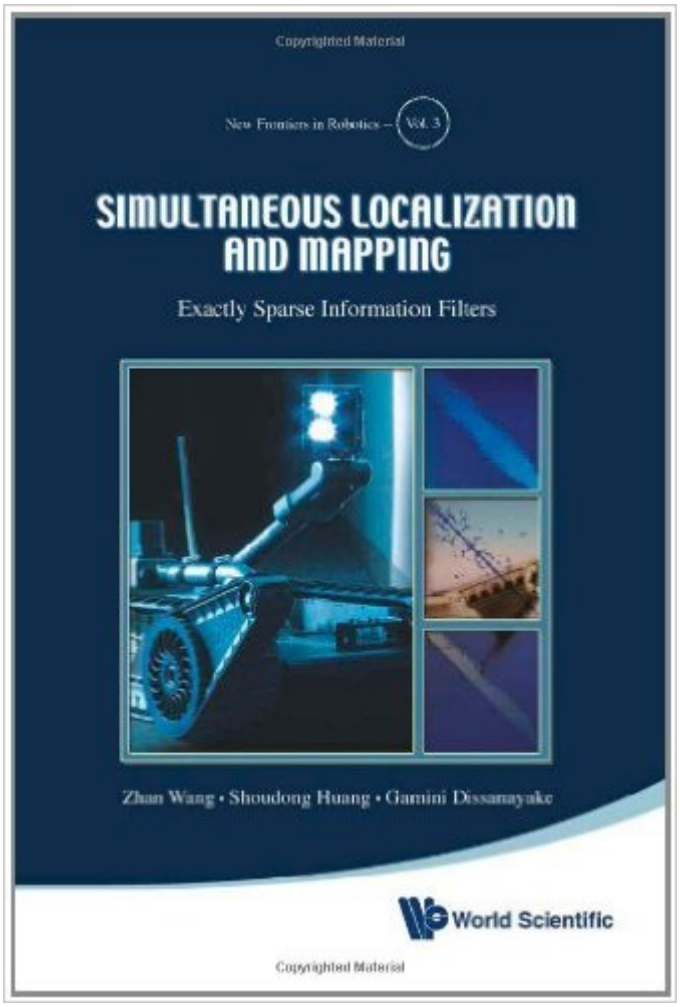
Simultaneous Localization And Mapping: Exactly Sparse Information Filters (New Frontiers In Robotics)



Synopsis

Simultaneous localization and mapping (SLAM) is a process where an autonomous vehicle builds a map of an unknown environment while concurrently generating an estimate for its location. This book is concerned with computationally efficient solutions to the large scale SLAM problems using exactly sparse Extended Information Filters (EIF). The invaluable book also provides a comprehensive theoretical analysis of the properties of the information matrix in EIF-based algorithms for SLAM. Three exactly sparse information filters for SLAM are described in detail, together with two efficient and exact methods for recovering the state vector and the covariance matrix. Proposed algorithms are extensively evaluated both in simulation and through experiments.

Book Information

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Customer Reviews

Nice introduction to the application of information filters in Simultaneous Localization and Mapping. It is not an introduction to the subject but most certainly one of the authors' PhD work turned to a book. It is well written for use of graduate students working in the area. My own thesis was not as readable so it is good for what it is.

Well written. Clear and complete. Good background on SLAM. The authors work through the gory math details in a clear and easy to follow manner. Overall, one of the more clear math-ish books I've read lately.The main contributions of this book are1) good explanation of the EIF and sparse

methods2) D-SLAM and extensions3) Sparse Local Submap Joining AlgorithmThe authors also provide good simulation and real-world test examples.

Simultaneous Localization and Mapping: Exactly Sparse Information Filters (New Frontiers in Robotics) Simultaneous Localization And Mapping: Exactly Sparse Information Filters (Volume 3) FastSLAM: A Scalable Method for the Simultaneous Localization and Mapping Problem in Robotics (Springer Tracts in Advanced Robotics) 3D Robotic Mapping: The Simultaneous Localization and Mapping Problem with Six Degrees of Freedom (Springer Tracts in Advanced Robotics) Embedded Robotics: A Hardware Architecture for Simultaneous Localization and Mapping of Mobile Robots SLAM Using Monocular Vision and Inertial Measurements: A New Low-cost Approach for Portable Simultaneous Localization and Mapping Environment Learning for Indoor Mobile Robots: A Stochastic State Estimation Approach to Simultaneous Localization and Map Building (Springer Tracts in Advanced Robotics) Simultaneous Localization and Mapping for Mobile Robots: Introduction and Methods Enhancing Indoor Localization with Proximity Information in WSN: A novel way of enhancing indoor localization in wireless sensor networks Robots and Robotics High Risk Robots Macmillan Library (Robots and Robotics - Macmillan Library) Robotics, Vision and Control: Fundamental Algorithms in MATLAB (Springer Tracts in Advanced Robotics) Spatial Representation and Reasoning for Robot Mapping: A Shape-Based Approach (Springer Tracts in Advanced Robotics) Mapping Australia (Mapping the World (Gareth Stevens)) Mapping South America (Mapping the Continents) Localization in Wireless Sensor Network: An enhanced composite approach with mobile beacon shortest path to solve localization problem in wireless sensor network RF-based Indoor Localization in Sensor Networks: Localization Using Signal Fingerprinting Protocol for Wireless Localization Systems: Communications Protocol for RF-based Wireless Indoor Localization Networks Secure Localization and Time Synchronization for Wireless Sensor and Ad Hoc Networks (Advances in Information Security) Visual Complexity: Mapping Patterns of Information The Book on Estimating Rehab Costs: The Investor's Guide to Defining Your Renovation Plan, Building Your Budget, and Knowing Exactly How Much It All Costs (BiggerPockets Presents...)