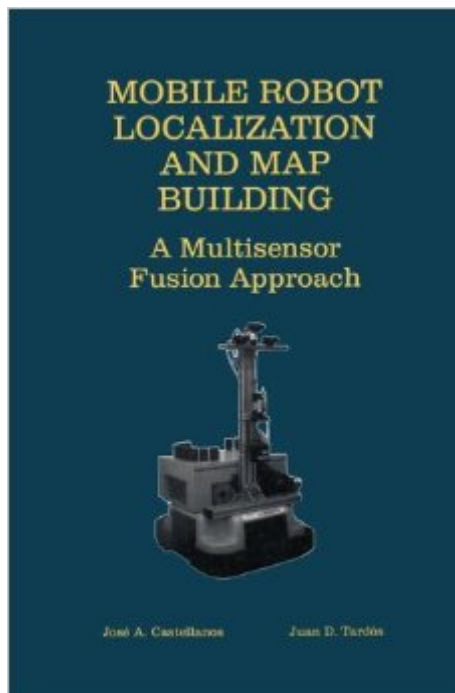


The book was found

Mobile Robot Localization And Map Building: A Multisensor Fusion Approach



Synopsis

During the last decade, many researchers have dedicated their efforts to constructing revolutionary machines and to providing them with forms of artificial intelligence to perform some of the most hazardous, risky or monotonous tasks historically assigned to human beings. Among those machines, mobile robots are undoubtedly at the cutting edge of current research directions. A rough classification of mobile robots can be considered: on the one hand, mobile robots oriented to human-made indoor environments; on the other hand, mobile robots oriented to unstructured outdoor environments, which could include flying oriented robots, space-oriented robots and underwater robots. The most common motion mechanism for surface mobile robots is the wheel-based mechanism, adapted both to flat surfaces, found in human-made environments, and to rough terrain, found in outdoor environments. However, some researchers have reported successful developments with leg-based mobile robots capable of climbing up stairs, although they require further investigation. The research work presented here focuses on wheel-based mobile robots that navigate in human-made indoor environments. The main problems described throughout this book are: Representation and integration of uncertain geometric information by means of the Symmetries and Perturbations Model (SPmodel). This model combines the use of probability theory to represent the imprecision in the location of a geometric element, and the theory of symmetries to represent the partiality due to characteristics of each type of geometric element. A solution to the first location problem, that is, the computation of an estimation for the mobile robot location when the vehicle is completely lost in the environment. The problem is formulated as a search in an interpretation tree using efficient matching algorithms and geometric constraints to reduce the size of the solution space. The book proposes a new probabilistic framework adapted to the problem of simultaneous localization and map building for mobile robots: the Symmetries and Perturbations Map (SPmap). This framework has been experimentally validated by a complete experiment which profited from ground-truth to accurately validate the precision and the appropriateness of the approach. The book emphasizes the generality of the solutions proposed to the different problems and their independence with respect to the exteroceptive sensors mounted on the mobile robot. Theoretical results are complemented by real experiments, where the use of multisensor-based approaches is highlighted.

Book Information

Hardcover: 205 pages

Publisher: Springer; 1999 edition (March 1, 2000)

Language: English

ISBN-10: 0792377893

ISBN-13: 978-0792377894

Product Dimensions: 6.1 x 0.6 x 9.2 inches

Shipping Weight: 15.2 ounces (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #9,828,414 in Books (See Top 100 in Books) #73 in Books > Computers & Technology > Programming > Software Design, Testing & Engineering > Localization #3803 in Books > Computers & Technology > Computer Science > Robotics #5383 in Books > Textbooks > Computer Science > Artificial Intelligence

[Download to continue reading...](#)

Mobile Robot Localization and Map Building: A Multisensor Fusion Approach Mobile Web Development: Building mobile websites, SMS and MMS messaging, mobile payments, and automated voice call systems with XHTML MP, WCSS, and mobile AJAX Environment Learning for Indoor Mobile Robots: A Stochastic State Estimation Approach to Simultaneous Localization and Map Building (Springer Tracts in Advanced Robotics) Localization in Wireless Sensor Network: An enhanced composite approach with mobile beacon shortest path to solve localization problem in wireless sensor network Streetwise Rome Map - Laminated City Center Street Map of Rome, Italy - Folding pocket size travel map with metro map, subway Go Mobile: Location-Based Marketing, Apps, Mobile Optimized Ad Campaigns, 2D Codes and Other Mobile Strategies to Grow Your Business StreetSmart NYC Map by VanDam - City Street Map of Manhattan, New York, in 9/11 National Memorial Edition - Laminated folding pocket size city travel and subway map, 2016 Edition Robot Localization Simulator Enhancing Indoor Localization with Proximity Information in WSN: A novel way of enhancing indoor localization in wireless sensor networks 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 Simultaneous Localization and Mapping for Mobile Robots: Introduction and Methods Embedded Robotics: A Hardware Architecture for Simultaneous Localization and Mapping of Mobile Robots Mobile Entity Localization and Tracking in GPS-less Environments: Second International Workshop, MELT 2009, Orlando, FL, USA, September 30, 2009, Proceedings (Lecture Notes in Computer Science) Wireless and Mobile Networking: IFIP Joint Conference on Mobile Wireless Communications Networks (MWCN'2008) and Personal Wireless Communications ... in Information and Communication Technology) Mobile Magic: The Saatchi and Saatchi Guide to Mobile Marketing

and Design Mobile Marketing: How Mobile Technology is Revolutionizing Marketing,
Communications and Advertising The Lightroom Mobile Book: How to extend the power of what you
do in Lightroom to your mobile devices Career Building Through Creating Mobile Apps (Digital
Career Building) Parallel and Distributed Map Merging and Localization: Algorithms, Tools and
Strategies for Robotic Networks (SpringerBriefs in Computer Science)

[Dmca](#)