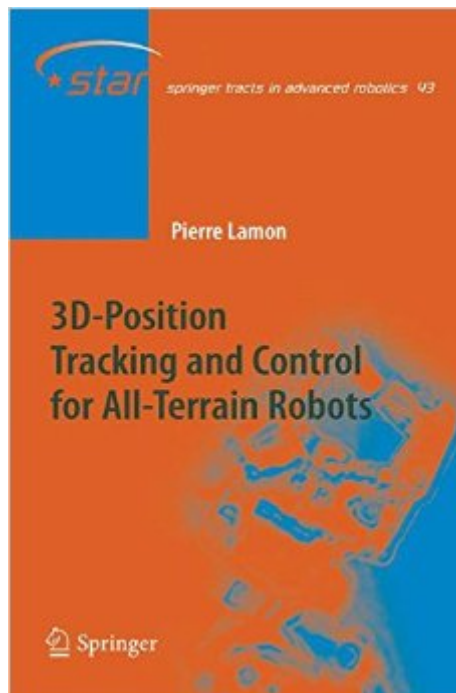


The book was found

3D-Position Tracking And Control For All-Terrain Robots (Springer Tracts In Advanced Robotics)



Synopsis

Rough terrain robotics is a fast evolving field of research and a lot of effort is deployed towards enabling a greater level of autonomy for outdoor vehicles. This book demonstrates how the accuracy of 3D position tracking can be improved by considering rover locomotion in rough terrain as a holistic problem. Although the selection of appropriate sensors is crucial to accurately track the rover's position, it is not the only aspect to consider. Indeed, the use of an unadapted locomotion concept severely affects the signal to noise ratio of the sensors, which leads to poor motion estimates. In this work, a mechanical structure allowing smooth motion across obstacles with limited wheel slip is used. In particular, it enables the use of odometry and inertial sensors to improve the position estimation in rough terrain. A method for computing 3D motion increments based on the wheel encoders and chassis state sensors is developed. Because it accounts for the kinematics of the rover, this method provides better results than the standard approach. To further improve the accuracy of the position tracking and the rover's climbing performance, a controller minimizing wheel slip is developed. The algorithm runs online and can be adapted to any kind of passive wheeled rover. Finally, sensor fusion using 3D-Odometry, inertial sensors and visual motion estimation based on stereovision is presented. The experimental results demonstrate how each sensor contributes to increase the accuracy and robustness of the 3D position estimation.

Book Information

Series: Springer Tracts in Advanced Robotics (Book 43)

Hardcover: 108 pages

Publisher: Springer; 2008 edition (May 27, 2008)

Language: English

ISBN-10: 3540782869

ISBN-13: 978-0824785628

Product Dimensions: 6.1 x 0.4 x 9.2 inches

Shipping Weight: 10.6 ounces (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #9,136,565 in Books (See Top 100 in Books) #66 in Books > Computers & Technology > Programming > Software Design, Testing & Engineering > Localization #2639 in Books > Science & Math > Physics > System Theory #3586 in Books > Computers & Technology > Computer Science > Robotics

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

3D-Position Tracking and Control for All-Terrain Robots (Springer Tracts in Advanced Robotics)
Robotics, Vision and Control: Fundamental Algorithms in MATLAB (Springer Tracts in Advanced Robotics)
FastSLAM: A Scalable Method for the Simultaneous Localization and Mapping Problem in Robotics (Springer Tracts in Advanced Robotics)
Robots and Robotics High Risk Robots Macmillan Library (Robots and Robotics - Macmillan Library)
Environment Learning for Indoor Mobile Robots: A Stochastic State Estimation Approach to Simultaneous Localization and Map Building (Springer Tracts in Advanced Robotics)
3D Robotic Mapping: The Simultaneous Localization and Mapping Problem with Six Degrees of Freedom (Springer Tracts in Advanced Robotics)
Spatial Representation and Reasoning for Robot Mapping: A Shape-Based Approach (Springer Tracts in Advanced Robotics)
Rational extended thermodynamics (Springer Tracts in Natural Philosophy)
Sex Position Coloring Book: A Dirty, Rude, Sexual and Kinky Adult Coloring Book of 40 Zentangle Sex Position Designs (Sexy Coloring Books) (Volume 1)
National Geographic Kids Everything Robotics: All the Photos, Facts, and Fun to Make You Race for Robots
Tracking Pedestrians from Multiple Cameras: Computer Vision techniques for multiple people localization, tracking and behavior analysis using several cameras
Biomimetic Neural Learning for Intelligent Robots: Intelligent Systems, Cognitive Robotics, and Neuroscience (Lecture Notes in Computer Science)
Embedded Robotics: A Hardware Architecture for Simultaneous Localization and Mapping of Mobile Robots
Making Simple Robots: Exploring Cutting-Edge Robotics with Everyday Stuff
Kawasaki KLF400 Bayou 1993-1999 (Clymer All-Terrain Vehicles)
Paper Robots: 25 Fantastic Robots You Can Build Yourself
Robots, Robots Everywhere! (Little Golden Book)
Robots, Robots Everywhere (Little Golden Board Book)
House of Robots: Robots Go Wild!
Control Self-Assessment: Reengineering Internal Control (Enterprise Governance, Control, Audit, Security, Risk Management and Business Continuity)

[Dmca](#)