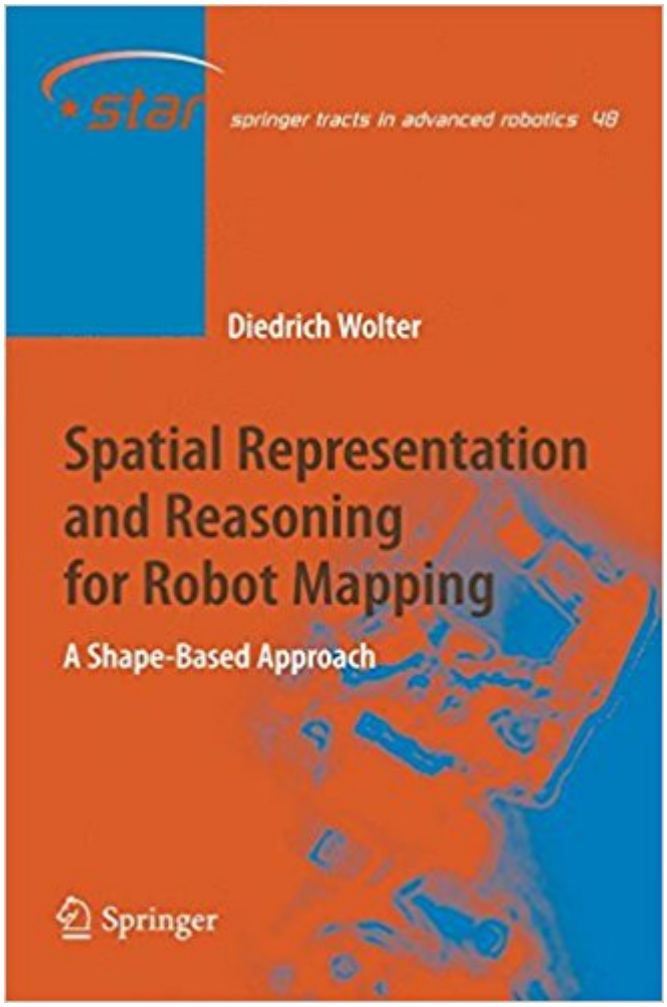
Spatial Representation And Reasoning For Robot Mapping: A Shape-Based Approach (Springer Tracts In Advanced Robotics)



Synopsis

This book demonstrates bene?ts of abstract and qualitative reasoning that have not received much attention in the context of autonomous robotics before. Bremen, Christian Freksa December 2007 Director of the SFB/TR 8 Spatial Cognition Preface This book addresses spatial representations and reasoning techniques for - bile robot mapping, providing an analysis of fundamental representations and processes involved. A spatial representation based on shape information is p- posed and shape analysis techniques are developed to tackle the correspondence problem in robot mapping. A general mathematical formulation is presented to provide the formal ground for an e?cient matching of con?gurations of objects. This book is a slightly revised version of my doctoral thesis submitted to the Faculty of Mathematics and Computer Science of the University of Bremen, Germany. Manycontributeto the developmentofa dissertation,butsomeofthemstand out. Christian Freksa, I thank you for supporting and encouraging my work, for introducing me to interdisciplinary work, for giving me the freedom to develop this dissertation, and for providing an enjoyable atmosphere to work in. Longin Jan Latecki, thank you for countless in-depth discussions helping me to develop andtopositionmywork,forthefruitfulcollaboration,andformakingaresearch stay possible that has been very valuable to me. I thank the research groups in Bremen and Philadelphia for helpful discussions and feedback, in particular Jan Oliver Wallgrun. Â¨ I also thank Kai-Florian Richter, Sven Bertel, and Lutz Frommberger for feedback on this work. Robert Ross, thank you for helping to proof-read this dissertation.

Book Information

Series: Springer Tracts in Advanced Robotics (Book 48)

Hardcover: 188 pages

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

Language: English

ISBN-10: 3540690115

ISBN-13: 978-3540690115

Product Dimensions: 6.1 x 0.5 x 9.2 inches

Shipping Weight: 12 ounces (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #8,044,637 in Books (See Top 100 in Books) #61 inÂ Books > Computers & Technology > Programming > Software Design, Testing & Engineering > Localization #2416 inÂ Books > Science & Math > Physics > System Theory #3309 inÂ Books > Computers &

Spatial Representation and Reasoning for Robot Mapping: A Shape-Based Approach (Springer Tracts in Advanced Robotics) 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) Robotics, Vision and Control: Fundamental Algorithms in MATLAB (Springer Tracts in Advanced Robotics) Environment Learning for Indoor Mobile Robots: A Stochastic State Estimation Approach to Simultaneous Localization and Map Building (Springer Tracts in Advanced Robotics) 3D-Position Tracking and Control for All-Terrain Robots (Springer Tracts in Advanced Robotics) Drawing Animals Shape by Shape: Create Cartoon Animals with Circles, Squares, Rectangles & Triangles (Drawing Shape by Shape series) Drawing Shape by Shape: Create Cartoon Characters with Circles, Squares & Triangles (Drawing Shape by Shape series) Probabilistic Reasoning in Intelligent Systems: Networks of Plausible Inference (Morgan Kaufmann Series in Representation and Reasoning) Master The Mechanical Aptitude and Spatial Relations Test (Mechanical Aptitude and Spatial Relations Tests) Spatial Light Modulators and Applications: Spatial Light Modulators for Applications in Coherent Communication, Adaptive Optics and Maskless Lithography Barron's Mechanical Aptitude and Spatial Relations Test, 3rd Edition (Barron's Mechanical Aptitude & Spatial Relations Test) Rational extended thermodynamics (Springer Tracts in Natural Philosophy) Robots and Robotics High Risk Robots Macmillan Library (Robots and Robotics - Macmillan Library) Spatial Cognition V: Reasoning, Action, Interaction (Lecture Notes in Computer Science) Knowledge Representation and Reasoning (The Morgan Kaufmann Series in Artificial Intelligence) Simultaneous Localization and Mapping: Exactly Sparse Information Filters (New Frontiers in Robotics) Embedded Robotics: A Hardware Architecture for Simultaneous Localization and Mapping of Mobile Robots Mapping Australia (Mapping the World (Gareth Stevens)) Mapping South America (Mapping the Continents)