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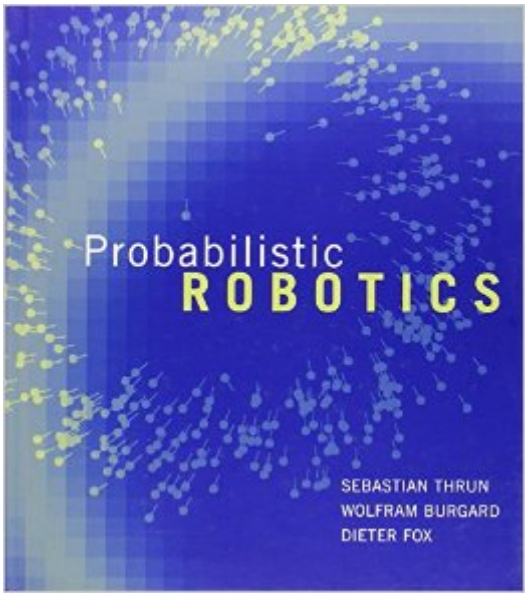
Probabilistic Robotics (Intelligent Robotics And Autonomous Agents Series)



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Synopsis

Probabilistic robotics is a new and growing area in robotics, concerned with perception and control in the face of uncertainty. Building on the field of mathematical statistics, probabilistic robotics endows robots with a new level of robustness in real-world situations. This book introduces the reader to a wealth of techniques and algorithms in the field. All algorithms are based on a single overarching mathematical foundation. Each chapter provides example implementations in pseudo code, detailed mathematical derivations, discussions from a practitioner's perspective, and extensive lists of exercises and class projects. The book's Web site, www.probabilistic-robotics.org, has additional material. The book is relevant for anyone involved in robotic software development and scientific research. It will also be of interest to applied statisticians and engineers dealing with real-world sensor data.

Book Information

Series: Intelligent Robotics and Autonomous Agents series
Hardcover: 672 pages
Publisher: The MIT Press; Intelligent Robotics and Autonomous Agents series edition (August 19, 2005)
Language: English
ISBN-10: 0262201623
ISBN-13: 978-0262201629
Product Dimensions: 8 x 1.1 x 9 inches
Shipping Weight: 3 pounds (View shipping rates and policies)
Average Customer Review: 4.6 out of 5 starsÂ Â See all reviewsÂ (35 customer reviews)
Best Sellers Rank: #138,573 in Books (See Top 100 in Books) #104 inÂ Books > Computers & Technology > Computer Science > Robotics #133 inÂ Books > Engineering & Transportation > Engineering > Industrial, Manufacturing & Operational Systems > Robotics & Automation #394 inÂ Books > Computers & Technology > Hardware & DIY

Customer Reviews

This is really an amazing book - it more than fulfilled my expectations.It starts from the very basics of probability theory and clearly derivesKalman Filtering, Particle Filtering, Probabilistic Motion and ProbabilisticPerception in the first 6 chapters. From there it moves on to talk aboutLocalization and Mapping completely separately (which I appreciated, sincethe two topics are far easier to comprehend independently) in chapters 7 and8 and then finally introduces SLAM (the main topic of

the book) in chapter9. From there it goes on to discuss various SLAM algorithms and implementations,and finally rounds out with planning and control (that is, the practicalapplication of SLAM algorithms).I can’t imagine a more well-researched academic work. Every point is backedup with examples and illustrations, and every algorithm is derived rigorously.Even better, the mathematical derivations are set apart from the main textso that a more "casual" reader can skip over the derivations and still getsome benefit from the text (and believe me, the math parts of this book arevery involved!). The authors assume a working knowledge of trigonometry,calculus and linear algebra (although you could likely make some sense of thebook even if you’re rusty in any of these areas). However, since the bookis about probability, you’ll probably need some background in probabilitytheory to get any value from this text. Chapter 2 contains a refresher onprobability theory, but I doubt it would be enough to decipher the laterchapters if you had no background in the subject.

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