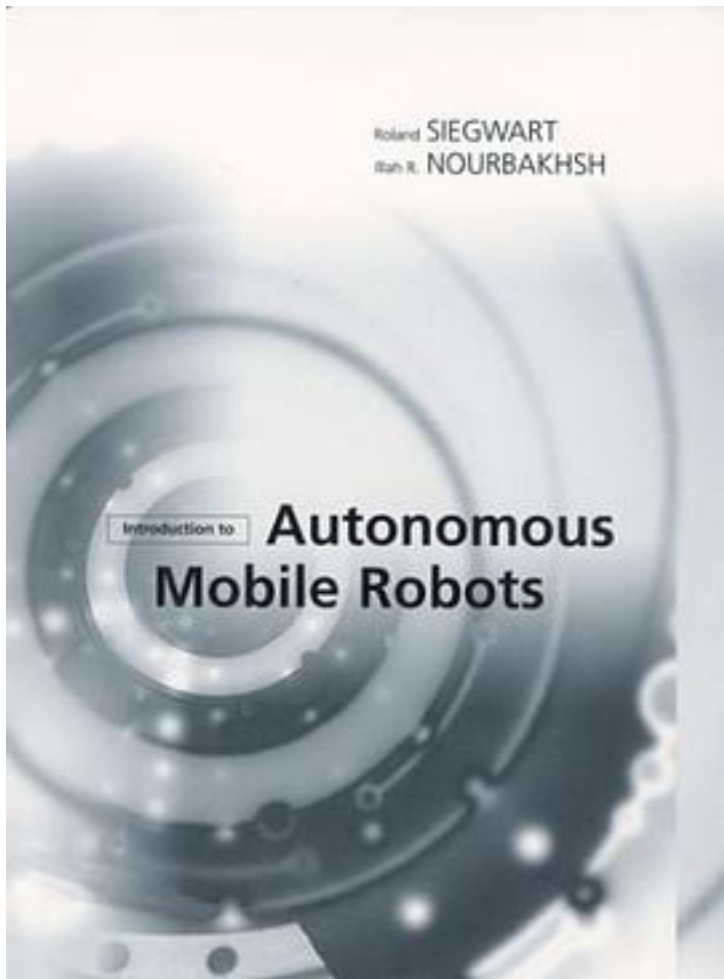


Introduction to Autonomous Mobile Robots (Intelligent Robotics and Autonomous Agents)



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Mobile robots range from the teleoperated Sojourner on the Mars Pathfinder mission to cleaning robots in the Paris Metro. Introduction to Autonomous Mobile Robots offers students and other interested readers an overview of the technology of mobility--the mechanisms that allow a mobile robot to move through a real world environment to perform its tasks--including locomotion, sensing, localization, and motion planning. It discusses all facets of mobile robotics, including hardware design, wheel design, kinematics analysis, sensors and perception, localization, mapping, and robot control architectures. The design of any successful robot involves the integration of many different disciplines, among them kinematics, signal analysis, information theory, artificial intelligence, and probability theory. Reflecting this, the book presents the techniques and technology that enable mobility in a series of interacting modules. Each chapter covers a different aspect of mobility, as the book moves from low-level to high-level details. The first two chapters explore low-level locomotory ability, examining robots' wheels and legs and the principles of kinematics. This is followed by an in-depth view of perception, including descriptions of many "off-the-shelf" sensors and an analysis of the interpretation of sensed data. The final two chapters consider the higher-level challenges of localization and cognition, discussing successful localization strategies, autonomous mapping, and navigation competence. Bringing together all aspects of mobile robotics into one volume, Introduction to Autonomous Mobile Robots can serve as a textbook for coursework or a working tool for beginners in the field.

作者介绍:

目录:

[Introduction to Autonomous Mobile Robots \(Intelligent Robotics and Autonomous Agents\) 下载链接1](#)

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