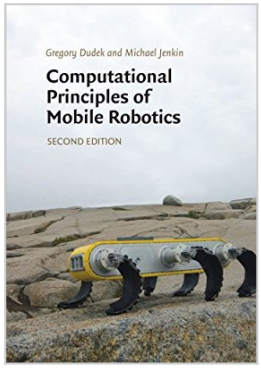

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By Gregory Dudek, Michael Jenkin

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Mobile robotics is a multidisciplinary field involving both computer science and engineering. Addressing the design of automated systems, it lies at the intersection of artificial intelligence, computational vision, and robotics. This textbook for advanced undergraduates and graduate students emphasizes algorithms for a range of strategies for locomotion, sensing, and reasoning. It concentrates on wheeled and legged mobile robots but discusses a variety of other propulsion systems. The new edition includes advances in robotics and intelligent machines over the last ten years, including significant coverage of SLAM (simultaneous localization and mapping) and multi-robot systems. It includes additional mathematical background and an extensive list of sample problems. Various mathematical techniques that were assumed in the first edition are now briefly introduced in appendices at the end of the text to make the book more self-contained. Researchers as well as students in the field of mobile robotics will appreciate this comprehensive treatment of state-of-the-art methods and key technologies.

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Review
"This book is an indispensable tool for any--both pre-university and university--course on mobile robotics. In relation to the first edition, this current one has been sufficiently updated. I recommend this book to researchers--particularly those who study localization or mapping--and doctoral students who are interested in investigating the latest approaches and techniques in the mobile robotics field."
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"This work (1st. ed., CH, Nov'00, 38-1584) became an immediate resource for this reviewer for both research and teaching purposes. In the multidisciplinary area of robotics, it is not uncommon to find textbooks that describe the algorithms involved in robotic control, perception, planning, etc., but fail to provide the reader with the critical details necessary for implementation. For the majority of topics, Dudek (McGill Univ., Canada) and Jenkin (York Univ., Canada) present the necessary math to perform the computation and in some cases also provide pseudocode. References are included throughout. The text really shines in its handling of algorithms for perception, sensor fusion, and path planning. The appendixes review probability, statistics, linear systems, filters, and Markov models, but not with enough depth to provide an introduction to someone new to any one of these topics. This work is a bit too advanced for an introductory course on robotics, but it would be a great resource for an intermediate or advanced course on mobile robotics."
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"...a great resource for an intermediate or advanced course on mobile robotics." CHOICE

About the Author
Gregory Dudek is Professor of Computer Science and Director of the School of Computer Science at McGill University. He holds a James McGill Chair and is a member of the Center for Intelligent Machines, and has been co-author of over 150 refereed publications on robotics and computer vision.

Michael Jenkin is a Professor of Computer Science and Engineering at York University. He has co-edited a series of eight books on human and machine vision.

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