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Sommario/riassunto	Design, simulate, and program interactive robots About This Book Design, simulate, build, and program an interactive autonomous mobile robot Leverage the power of ROS, Gazebo, and Python to enhance your robotic skills A hands-on guide to creating an autonomous mobile robot with the help of ROS and Python Who This Book Is For This book is for those who are conducting research in mobile robotics and autonomous navigation. As well as the robotics research domain, this book is also for the robot hobbyist community. You're expected to have a basic understanding of Linux commands and Python. What You Will Learn Design a differential robot from scratch Model a differential robot using ROS and URDF Simulate a differential robot using ROS and Gazebo Design robot hardware electronics Interface robot actuators with embedded boards Explore the interfacing of different 3D depth cameras in ROS Implement autonomous navigation in ChefBot Create a GUI for robot control In Detail Robot Operating System (ROS) is one of the most popular robotics software frameworks in research and industry. It has various features for implementing different capabilities in a robot without implementing them from scratch. This book starts by

showing you the fundamentals of ROS so you understand the basics of differential robots. Then, you'll learn about robot modeling and how to design and simulate it using ROS. Moving on, we'll design robot hardware and interfacing actuators. Then, you'll learn to configure and program depth sensors and LIDARs using ROS. Finally, you'll create a GUI for your robot using the Qt framework. By the end of this tutorial, you'll have a clear idea of how to integrate and assemble everything into a robot and how to bundle the software package. Style and approach A step-by-step guide which will help you to create an autonomous mobile robot with the help of ROS and Python. It will help you to understand and implement the fundamental concepts of differential robots and teach you to create differential robot's simulation using Gazebo.
