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Nota di contenuto	Cover; Copyright; Credits; About the Author; About the Reviewers; www.PacktPub.com; Table of Contents; Preface; Chapter 1: Getting Started with the BeagleBone Black; Mission briefing; The unveiling!; Hooking up a keyboard, mouse, and display; Changing the operating system; Adding a graphical user interface; Accessing the board remotely; Mission accomplished; A challenge; Chapter 2: Programming the BeagleBone Black; Mission briefing; Basic Linux commands and navigating the filesystem; Createing, editing, and saving files on the BeagleBone Black Creating and running Python programs on the BeagleBone BlackBasic programming constructs on the BeagleBone Black; Introduction to the C++ programming language; Mission accomplished; A challenge; Chapter 3: Providing Speech Input and Output; Mission briefing; Hooking up the HW to make and input sound; Using Espeak to allow your projects to respond in a robot voice; Using PocketSphinx to interpret your commands; Providing the capability to interpret; your commands and have your robot initiate an action; Mission accomplished; A challenge; Chapter 4: Allowing the BeagleBone Black to See Mission briefingConnecting the USB camera to the BeagleBone Black and viewing the images; Downloading and installing OpenCV - a full-featured vision library; Using the vision library to detect colored objects; Mission accomplished; Challenges; Chapter 5: Making the Unit Mobile - Controlling Wheeled Movement; Mission briefing; Using a

motor controller to control the speed of your platform; Controlling your mobile platform programmatically using the BeagleBone Black; Making your mobile platform truly mobile by issuing voice commands; Mission accomplished; A challenge
Chapter 6: Making the Unit Very Mobile - Controlling Legged MovementMission briefing; Connecting the BeagleBone Black to the mobile platform using a servo controller; Creating a program in Linux to control the mobile platform; Making your mobile platform truly mobile by issuing voice commands; Mission accomplished; A challenge; Chapter 7: Avoiding Obstacles Using Sensors; Mission briefing; Connecting the BeagleBone Black to a USB Sonar sensor; Using a servo to move a single sensor; Mission accomplished; A challenge; Chapter 8: Going Truly Mobile - Remote Control of Your Robot
Mission briefingConnecting the BeagleBone Black to a wireless USB keyboard; Using the keyboard to control your project; Mission accomplished; A challenge; Chapter 9: Using a GPS Receiver to Locate Your Robot; Mission briefing; Connecting the BeagleBone Black to a GPS device; Accessing the GPS programmatically and determining how to move to a location; Mission accomplished; A challenge; Chapter 10: System Dynamics; Mission briefing; Creating a general control structure so capabilities can communicate; Mission accomplished; A challenge; Chapter 11: By Land, Sea, and Air; Mission briefing
Using the BeagleBone Black in robots that can sail

Sommario/riassunto

Develop practical example projects with detailed explanations; combine the projects in a vast number of ways to create different robot designs, or work through them in sequence to discover the full capability of the BeagleBone Black.This book is for anyone who is curious about using new, low-cost hardware to create robotic projects that have previously been the domain of research labs, major universities or Defence departments. Some programming experience would be useful, but if you know how to use a personal computer, you can use this book to construct far more complex systems than you would