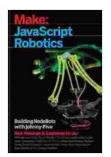# Building Nodebots With Johnny Five, Raspberry Pi, Arduino, and BeagleBone: A Comprehensive Guide

Nodebots are interactive and autonomous robots that can be controlled and programmed using JavaScript. They offer a unique blend of hardware and software, combining the versatility of JavaScript with the physical capabilities of embedded devices like Raspberry Pi, Arduino, and BeagleBone.

This comprehensive guide will provide a step-by-step approach to building Nodebots using Johnny Five, an open-source JavaScript robotics and physical computing platform. Whether you're a beginner or an experienced maker, this guide will equip you with the knowledge and skills to create your own custom Nodebots.

Before you begin building your Nodebot, you'll need a few basic components:

JavaScript Robotics: Building NodeBots with Johnny-Five, Raspberry Pi, Arduino, and BeagleBone (Make)

by Donovan Buck

★★★★☆ 4.3 out of 5

Language	: English
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Screen Reader	: Supported
Enhanced typesetting	: Enabled
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X-Ray for textbooks	: Enabled

- A Raspberry Pi, Arduino, or BeagleBone

- A Johnny Five compatible board

- A power supply

- A breadboard and jumper wires

- Various electronic components (e.g., LEDs, sensors, motors)

Once you have your components, you can follow these steps to get started:

1. Install Johnny Five on your embedded device.

2. Connect your Johnny Five compatible board to your embedded device.

3. Install the necessary drivers and software for your electronic components.

4. Write a JavaScript program to control your Nodebot.

When choosing a hardware platform for your Nodebot, there are several factors to consider:

- **Processing power:** Raspberry Pi and BeagleBone offer more processing power than Arduino, making them suitable for complex tasks.

- **GPIO pins:** GPIO pins allow you to connect your embedded device to electronic components. More GPIO pins provide greater flexibility.

- **Expansion ports:** Expansion ports allow you to connect additional boards, such as sensors or motor controllers.

- **Power consumption:** Consider the power consumption of your electronic components and choose a power supply that can meet their requirements.

Johnny Five is a versatile platform that supports a wide range of electronic components, including LEDs, sensors, motors, and displays. It provides a simple and intuitive API that makes it easy to control your Nodebot's hardware.

Here are some of the key features of Johnny Five:

- **Abstraction:** Johnny Five abstracts the underlying hardware, making it easy to write code that is compatible with multiple embedded devices.

- **Event-driven:** Johnny Five uses an event-driven architecture, making it easy to respond to changes in your Nodebot's environment.

- **Plugins:** Johnny Five provides a wide range of plugins that allow you to connect to different types of electronic components.

To help you get started building Nodebots, here are a few real-world examples:

- **LED blinker:** This simple Nodebot blinks an LED on and off at a specified interval.

- **Motion sensor:** This Nodebot uses a motion sensor to detect movement and trigger an action, such as turning on a light.

- **Line follower:** This Nodebot follows a black line on a white surface using light sensors.

- **Autonomous rover:** This Nodebot navigates its environment using sensors and motors, and can avoid obstacles.

Building Nodebots is a rewarding and educational experience that combines hardware and software in a unique way. With the help of Johnny Five, Raspberry Pi, Arduino, and BeagleBone, you can create interactive and autonomous robots that can perform a variety of tasks.
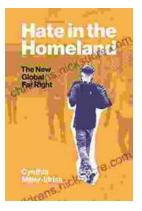
This guide has provided you with a comprehensive overview of the process of building Nodebots. By following the steps outlined in this guide, you can create your own custom Nodebots and explore the exciting world of robotics and physical computing.

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