

Arduino Smart Vacuum Cleaning Robot: Ping Pong Game, Call and Message Utilizing

In this article, we will delve into the exciting world of robotics by building an Arduino smart vacuum cleaning robot that not only cleans your floors but also engages you with a fun ping pong game and keeps you connected through call and message functionalities.



Arduino Smart Vacuum Cleaning Robot, Ping Pong Game, Call and Message utilizing, Private Chat Room, mobile phone Controlled Digital Code Lock by Sumeet Savant

★★★★★ 5 out of 5

Language : English
File size : 5043 KB
Text-to-Speech : Enabled
Screen Reader : Supported
Enhanced typesetting : Enabled
Print length : 192 pages
Lending : Enabled



Hardware Components

- Arduino Uno or compatible microcontroller
- DC motors (2 for locomotion, 1 for vacuum)
- Motor drivers (e.g., L298N)
- Vacuum cleaner motor
- Ultrasonic sensors (4)

- Ping pong paddle
- Ping pong ball
- GSM module (e.g., SIM800L)
- LCD display
- Power supply (e.g., 12V battery)

Software Development

The software for the smart vacuum cleaning robot is divided into three main modules:

1. **Locomotion and Vacuuming:** This module controls the movement of the robot and the operation of the vacuum cleaner motor. Ultrasonic sensors are used for obstacle avoidance.
2. **Ping Pong Game:** This module handles the ping pong game functionality. It detects the position of the ball using ultrasonic sensors and controls the movement of the paddle.
3. **Call and Message:** This module utilizes the GSM module to establish cellular connectivity. It allows the robot to make calls and send messages.

Assembly and Operation

Once the hardware and software components are ready, follow these steps to assemble and operate the smart vacuum cleaning robot:

1. Connect the hardware components according to the circuit diagram.
2. Upload the software onto the Arduino microcontroller.

3. Place the robot on a flat surface and power it on.
4. To initiate vacuuming, press the designated button on the robot or send a command via the GSM module.
5. For the ping pong game, hold the paddle and start the game by pressing another designated button. The robot will automatically adjust its paddle movement to return the ball.
6. To make a call or send a message, use the GSM module interface provided in the software.

Congratulations! You have successfully built an Arduino smart vacuum cleaning robot with advanced features like ping pong game, call and message utilizing. This project not only cleans your floors but also provides entertainment and connectivity, making it a unique and practical addition to your home. Embrace the world of robotics and continue exploring new possibilities.

Additional Features and Enhancements

- **Auto-recharge:** Implement a mechanism for the robot to automatically return to its charging station when the battery is low.
- **Remote control:** Allow the robot to be controlled remotely using a smartphone app or web interface.
- **Virtual assistant integration:** Connect the robot to a virtual assistant like Alexa or Google Assistant for voice control.

Technical Specifications

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Parameter	Value
Dimensions	30cm x 30cm x 10cm (approximately)
Weight	2kg (approximately)
Battery	12V, 2000mAh
Maximum Speed	1m/s
Ultrasonic Sensor Range	5m

FAQ

1. Can I use different types of microcontrollers?

Yes, you can use any Arduino-compatible microcontroller, such as Mega or Due, but you may need to modify the software accordingly.

2. How do I adjust the sensitivity of the ultrasonic sensors?

You can adjust the sensitivity of the ultrasonic sensors by changing the threshold values in the software.

3. Where can I find replacement parts?

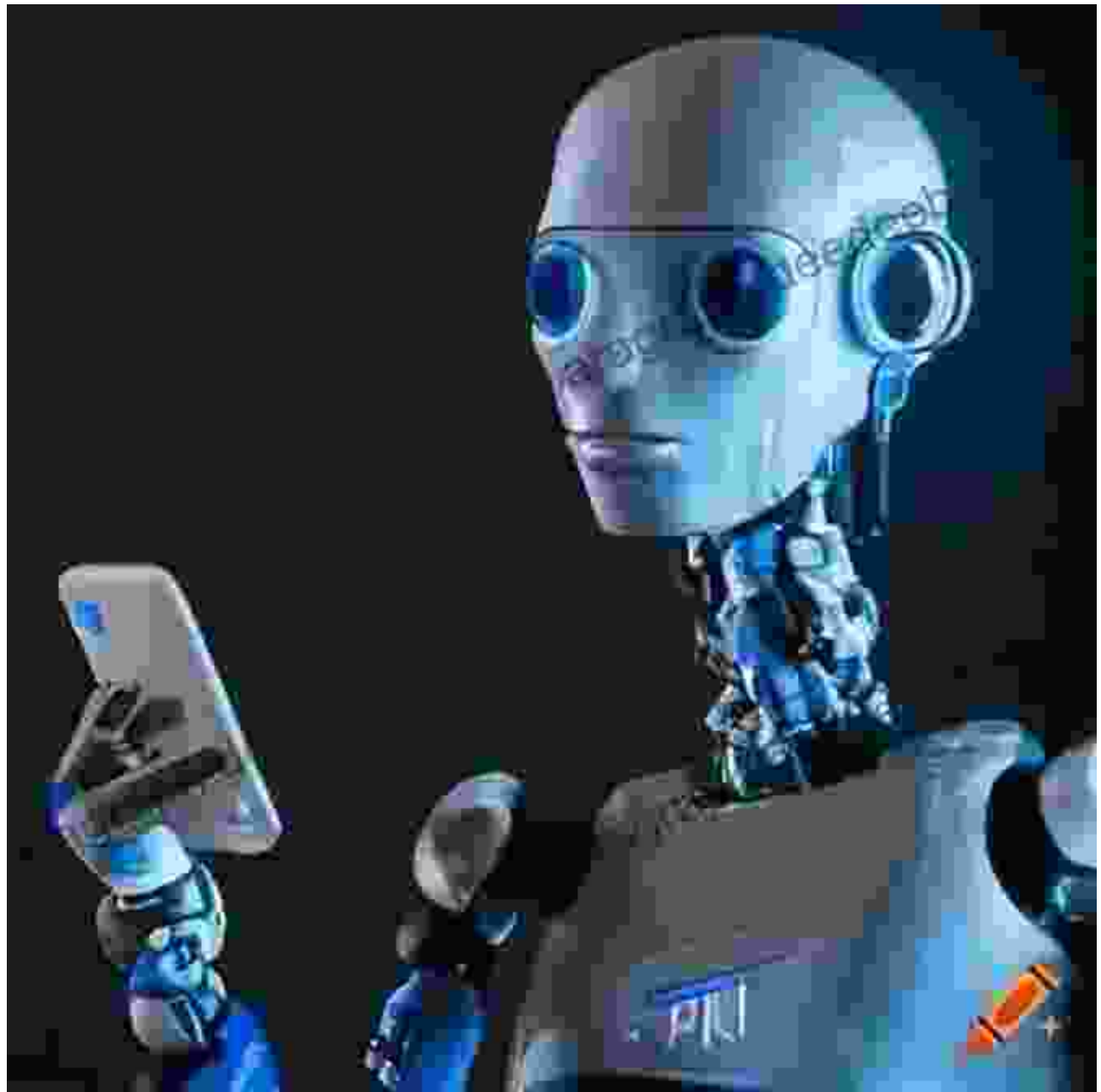
Replacement parts can be found online or at electronics stores. You can also 3D print certain parts if you have access to a 3D printer.

Image Gallery







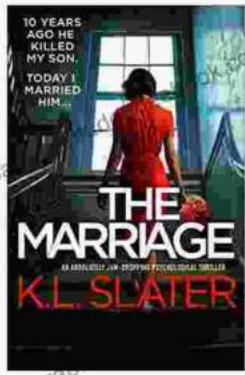


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