Automatic Docking System for Recharging Home Surveillance Robots

Abstract:

Nowadays, it is easy to keep a guard outside the house for home security. But we cannot always rely on guards. In some cases, people will lock the house for long days . Criminals can use this kind of facility, which will create problems even to the house owner. This project is designed for inner home surveillance. For continuous surveillance, automatic recharging has been done with the robot. This robotic section runs with LPC2148 with CMOS camera with a person detection sensor. And another docking section with wireless power transfer unit for recharging the robot. Communications between robot and monitoring unit are accomplished through IEEE 802.15.4.

For surveillance purposes, the path of the robot has to feed initially. This Robot will be ready to capture the image of any human who enters into robot surveillance regions. This presence of human can be determined by the thermal heat radiation from the object and this interrupt will wake up the camera. In order to cover the entire room , the robot module can able to turn in various angles with manual and automatic control. Under the absence of human the processor will keep the camera in the sleep mode. The technique is followed in the project to reduce the energy consumption of the robot. In this project the robotic unit can be charged using wireless power transmission method. Ultrasonic signal confirms the robot that it is in the power transmission region. This project uses the Matlab platform for the image visualization.

Existing System:

- ✓ Image isn't receiving accurately
- ✓ More energy usage
- ✓ No layer architecture
- ✓ No docking section

Proposed System:

- ✓ Less energy usage
- ✓ Person detection technique is used
- ✓ Layered architecture between nodes
- ✓ Docking unit for robot module

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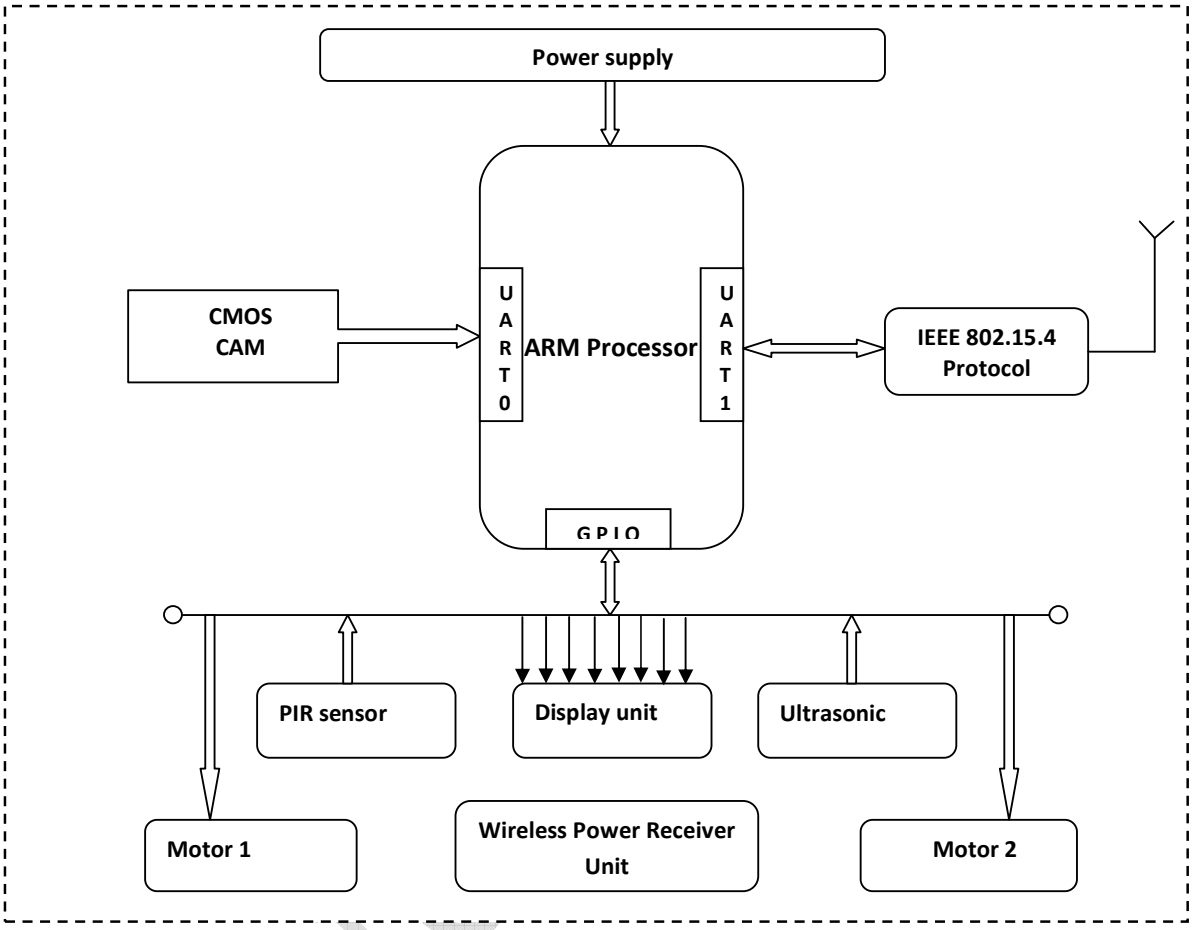
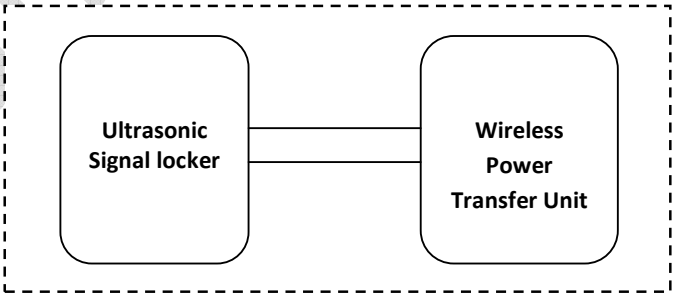
Block diagram:

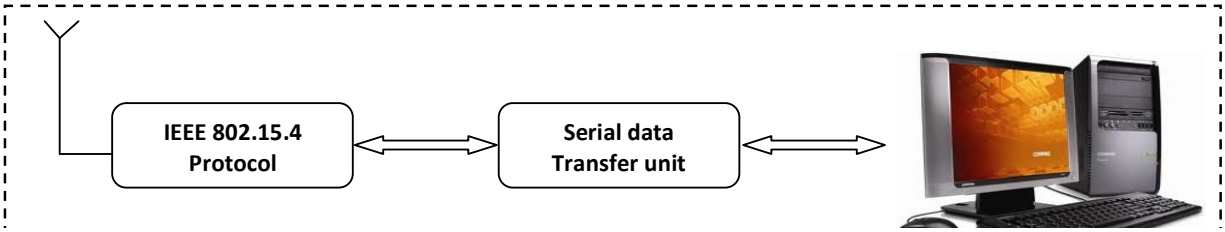
Surveillance section:



Docking section:



Monitoring section:



Hardware & Software Requirements:

Hardware:

- ARM 7 Processor
- Ultrasonic sensor
- PIR senosr
- CMOS camera
- Zigbee
- Display unit

Software :

- Keil
- Flash magic
- orcad
- MATLAB
- Proteus

Advantages:

- Automatic charging for robot
- Improved safety and security
- Easy to transfer images
- Less energy usage.

Applications:

- Industrial Application
- Home Applications
- Robtic Applications
- Milatary applications

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