CSE 334: Pervasive Computing

Dept. of Computer Science & Engineering
Daffodil International University

Lecture- 4: Embedded Controls

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Content

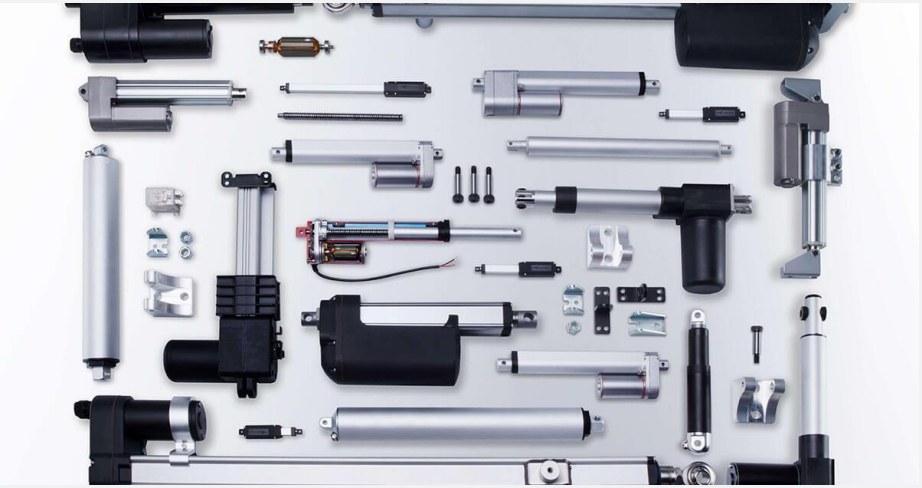
- Smart Sensors and Actuators
- Smart Appliances
- Appliances and Horne Networking
- Automotive Computing

Smart Sensors

A smart sensor is a device **that takes input from the physical environment and uses built-in compute resources to perform predefined functions** upon detection of specific input and then process data before passing it on.

Smart Actuators

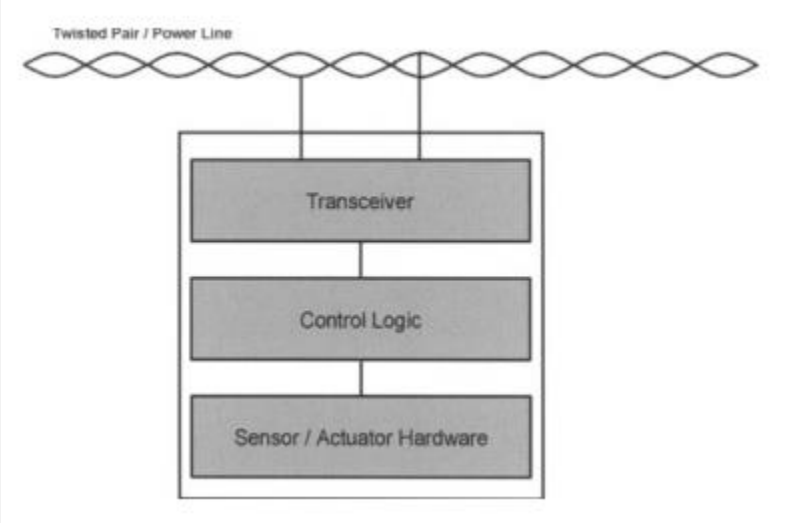
A smart actuator is defined as **the integrated actuator of all components such as motor, controller, sensors, and communication unit.**



Smart Control Internal Structure

Twisted-pair and power line signaling are commonly used for wireline networking.

- Transceiver
- Control Logic
- Sensor/Actual Hardware



Sensors And Actuators

The sensor / actuator hardware either senses its environment or activates motors, solenoids, and the like to carry out an action.

- Sensors

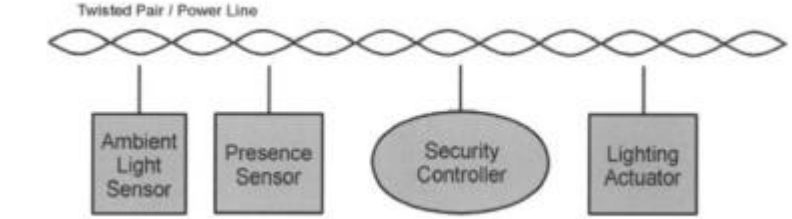
  Sensors are available for air temperature, liquid temperature, pressure, and various gasses. Outdoor and indoor motion detectors enhance security systems and light level sensors control lighting installations.

- Actuators

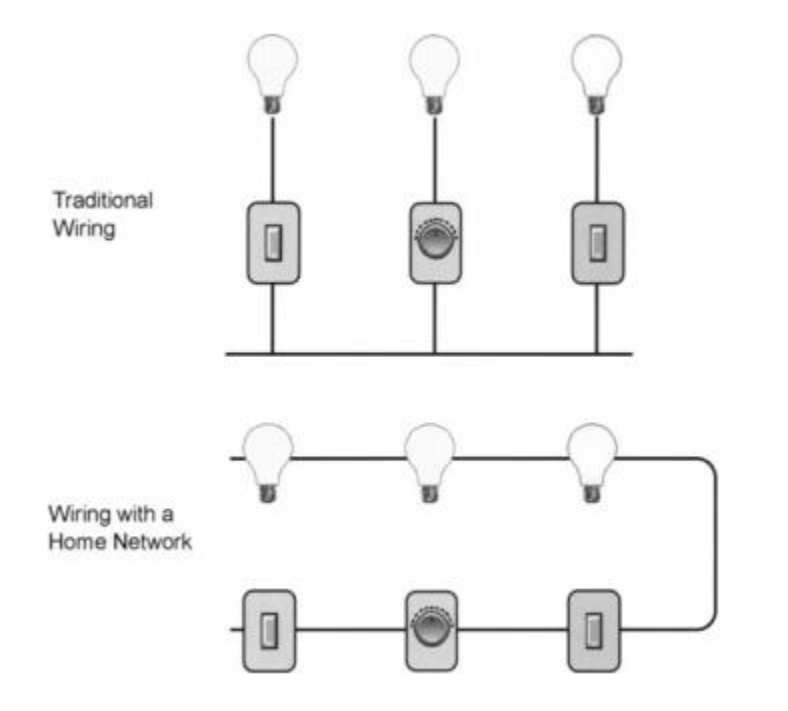
  Everything that work on/against the environment.

Example Network

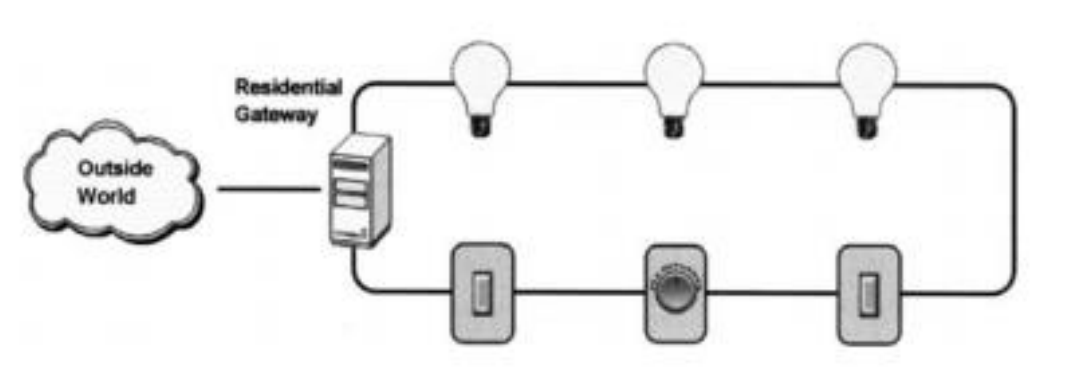
A simple network for external lighting control. This network contains an ambient light sensor, a presence sensor, a security controller, and a lighting actuator



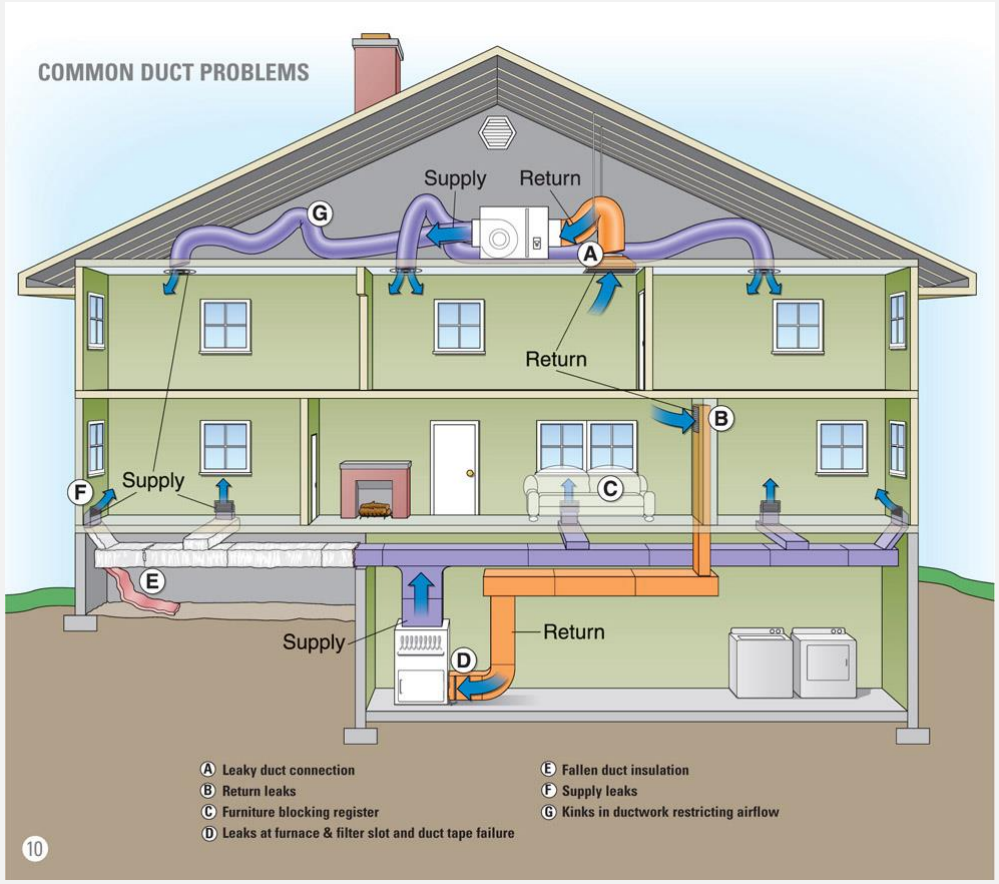
Traditional Wiring Vs Home Network Wiring



Example Of Residential Gateway

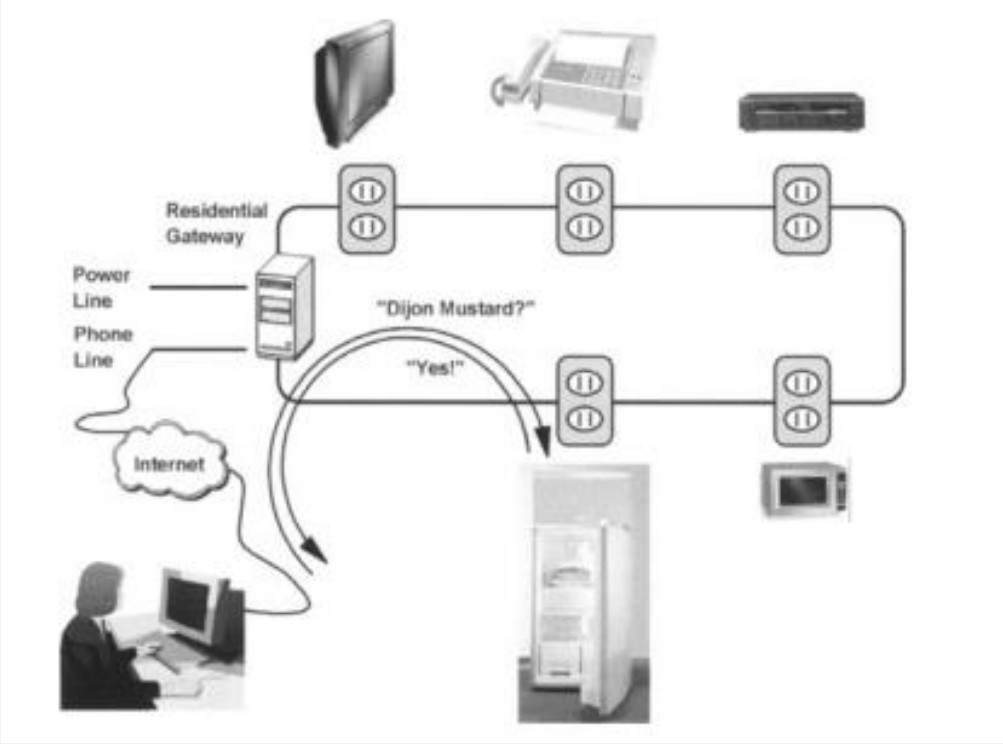


Heating Venting and Air Conditioning
HVAC



Residential Gateway

Power Line Networking



Residential Gateway

Cellular Communication

Thank you!