RFIC TECHNOLOGIES

IOT-WSN

by

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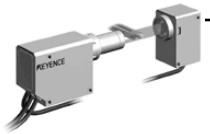
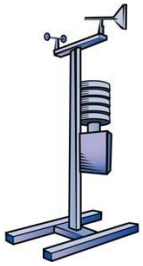
Sensors Are Everywhere

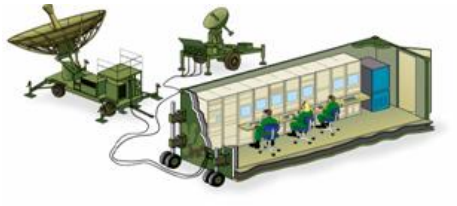










WIRELESS SENSOR NETWORK

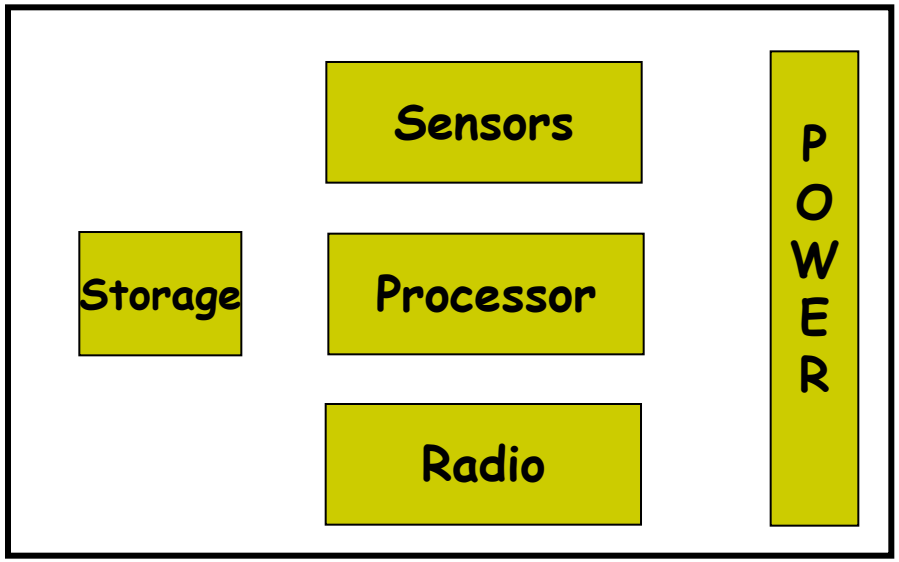
- Wireless Sensor Networks are networks that consists of sensors which are distributed in an ad hoc manner.
- These sensors work with each other to sense some physical phenomenon and then the information gathered is processed to get relevant results.
- Wireless sensor networks consists of protocols and algorithms with self-organizing capabilities.

Wireless Sensor Networks

A wireless sensor network is a collection of nodes organized into a cooperative network. Each node consists of processing capability may contain multiple types of memory have an RF transceiver, have a power source (e.g., batteries and solar cells), and accommodate various sensors.

Sensor Node

- Networks of typically small, battery-powered, wireless devices.
  - On-board processing,
  - Communication, and
  - Sensing capabilities.



WSN device schematics

Applications of sensor networks

Military applications

- Monitoring friendly forces, equipment and ammunition
- Reconnaissance of opposing forces and terrain
- Battlefield surveillance
- Battle damage assessment
- Nuclear, biological and chemical attack detection

Applications of sensor networks

Environmental applications

- Forest fire detection
- Biocomplexity mapping of the environment
- Flood detection
- Precision agriculture

Applications of sensor networks

Health applications

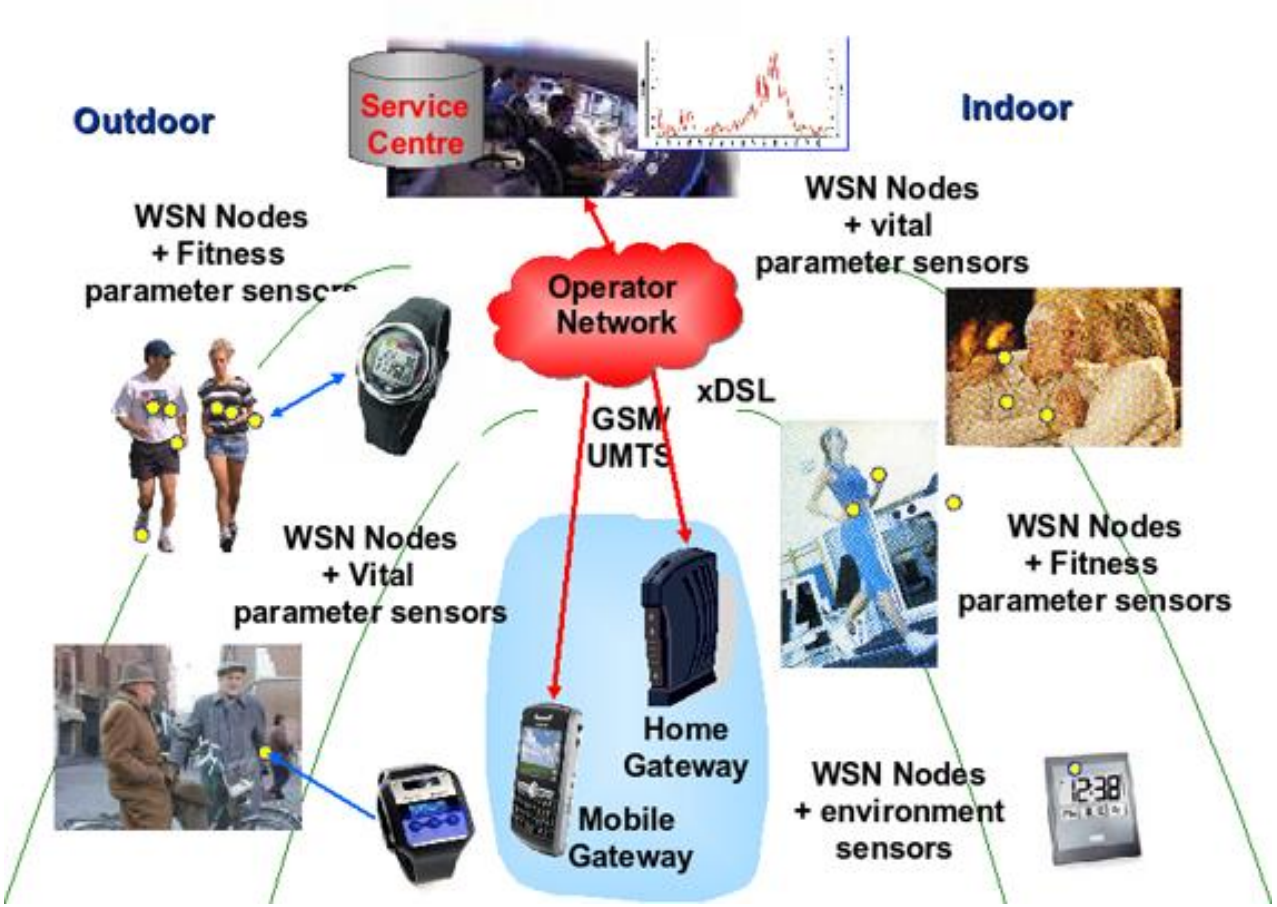
- Tele-monitoring of human physiological data
- Tracking and monitoring patients and doctors inside a hospital
- Drug administration in hospitals

Applications of sensor networks

Home and other commercial applications

- Home automation and Smart environment
- Interactive museums
- Managing inventory control
- Vehicle tracking and detection
- Detecting and monitoring car thefts

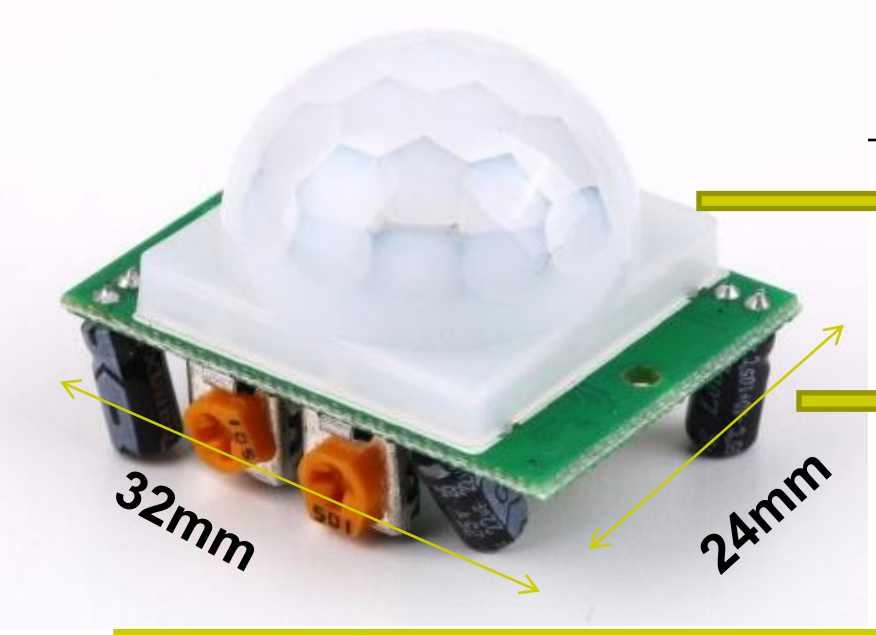
EXAMPLE OF SENSORS



MOBILE PHONE

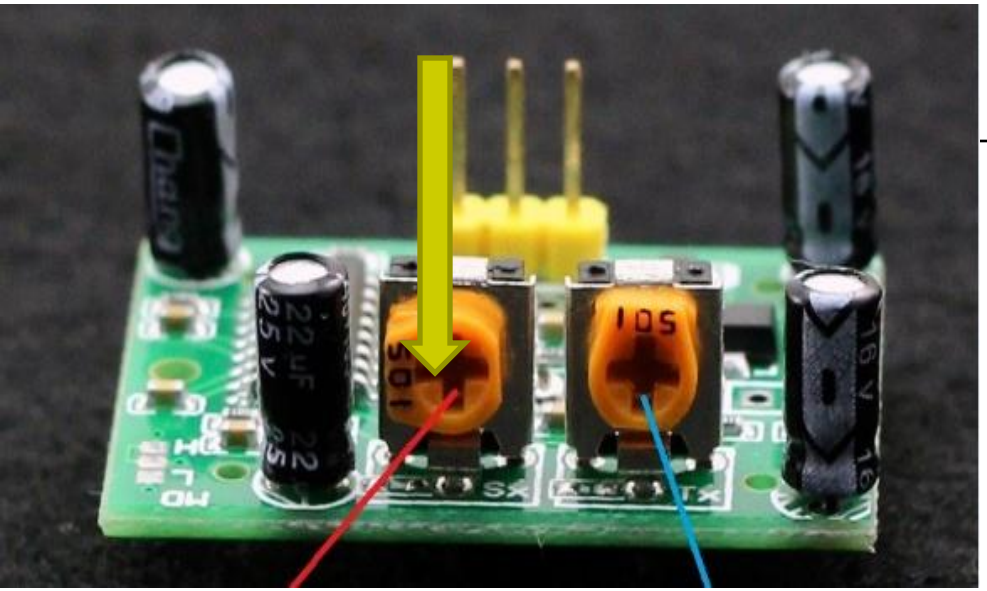
HC-SR501

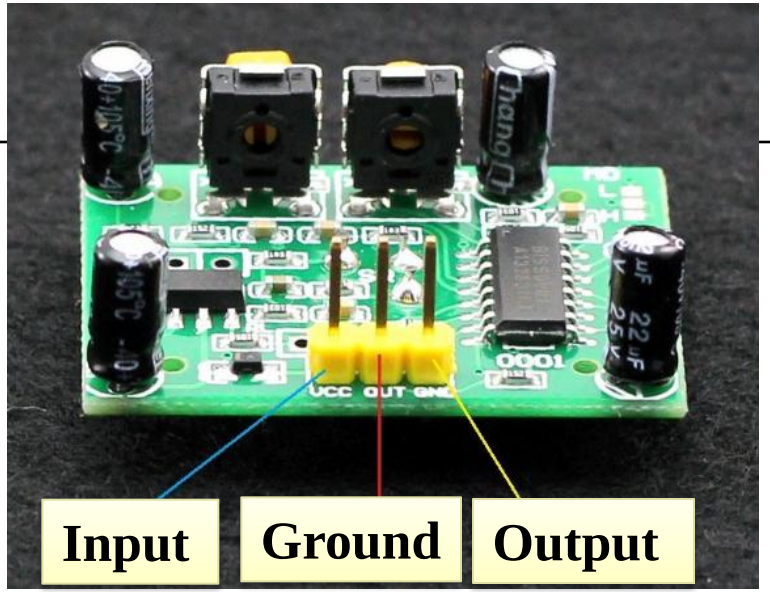
Infrared PIR Motion Sensor Detector Module



Basic Specifications			
Detection distance:	**Delay time**	**Working voltage**	**Voltage output**
0-7M	**0.5-200s**	**DC 4.5V – 20V**	**High/Low output : 3.3V/0V**

Potentiometer



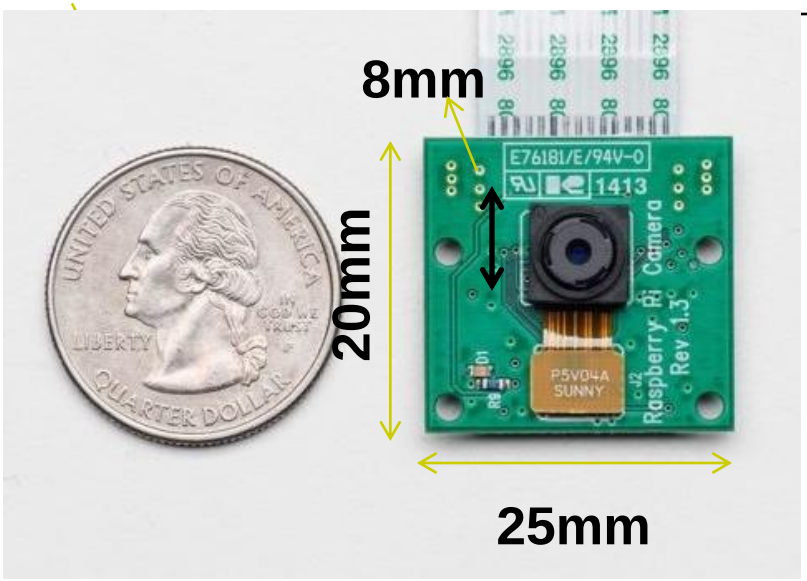


•Adjust distance Clockwise = increase 7m Anticlockwise= decrease 0m

•Adjust delay time Clockwise=longer delay Anticlockwise=shorter delay

Output voltage: to enter the sensor output range is high, people leave the sensor range of the automatic delay off high, output low

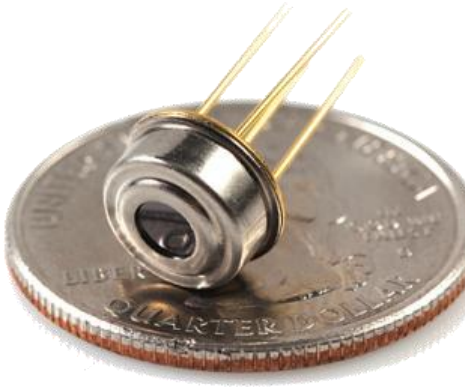
Raspberry Pi 5MP 1080P Camera NoIR (No IR Filter) Night Vision Module



Basic Specifications	
Sensor size	3.67×2.74mm
Pixel count	2592×1944
Sensor type	Color CMOS(5-megapixel)
Fixed focus	1m to infinity
Video supports	1080p30,720p60 and 640×480p60/90
weight	3g

TEMPERATURE SENSOR

- Power saving mode
- Customizable PWM output for continuous reading
- Medical accuracy of 0.1°C in a limited temperature range
- SMBus compatible digital interface for fast temperature readings and building sensor networks
- High accuracy of 0.5°C over wide temperature range (0..+50 C for both Ta and To)
- Infrared thermometer for non contact temperature measurements.
- 17-bit ADC and powerful DSP
  Resolution of 0.02°C



SENSOR MODULE FOR MICROCOMPUTER

- RFID module
- GPS RECEIVER MODULE
- Microphone sound sensor module
- Temperature and humidity sensor module
- Analog Temperature sensor module
- Digital Temperature sensor module
- Linear magnetic Hall sensor
- Flame sensor module
- Sensitive microphone sensor module
- Photo resistor module
- CAMERA MODULE

THANKS