CHARACTRISTICS OF SENSOR

Sumit

INTRODUCTION

Sensors are devices that are used to measure physical variables like temperature, pH, velocity, rotational rate, flow rate, pressure and many others. Today, most sensors do not indicate a reading on an analog scale (like a thermometer), but, rather, they produce a voltage or a digital signal that is indicative of the physical variable they measure. Those signals are often imported into computer programs, stored in files, plotted on computers and analyzed to death.

CHARACTERISTICS OF SENSOR SYSTEM

Static ,Dynamic ,Accuracy ,Dynamic, error response, Distortion, Hysteresis, Instability and drift, Minimum detectable signal, Noise, Nonlinearity, Operating range.

DISTORTION

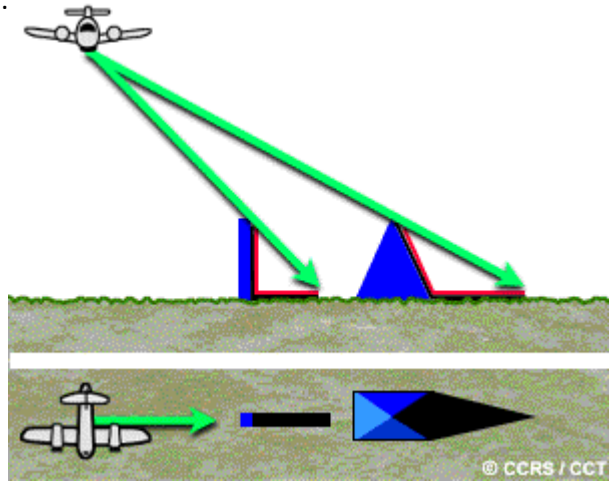
Geometric Distortion

Any remote sensing image, regardless of whether it is acquired by a multispectral scanner on board a satellite, a photographic system in an aircraft, or any other platform/sensor combination, will have various geometric distortions. This problem is inherent in remote sensing, as we attempt to accurately represent the three-dimensional surface of the Earth as a two-dimensional image. All remote sensing images are subject to some form of geometric distortions, depending on the manner in which the data are acquired.

Radar Image Distortions

As with all remote sensing systems, the viewing geometry of a radar results in certain geometric distortions on the resultant imagery. However, there are key differences for radar imagery which are

due to the side-looking viewing geometry, and the fact that the radar is fundamentally a distance measuring device.



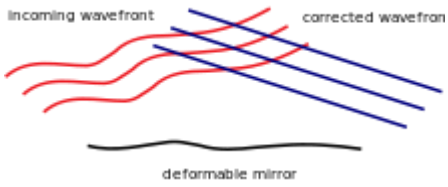
Red surfaces are completely in shadow. Black areas in image are shadowed and contain no information.

Electromagnetic Tracking System with Reduced Distortion

An electromagnetic tracking system is a navigation system that is based on the measurement of electromagnetic fields with a known distribution. Based on those measurements, the position and orientation of the field sensor can be calculated. Electromagnetic tracking systems are not dependent on line-of-sight or rigid connections like in optical and mechanical tracking systems. It is used in computer-assisted surgery to track the position of the instrument relative to the patient's anatomy. It has been used successfully for navigation in ear, nose and throat surgery (ENT) as well as in cranial and spine applications. The availability of micro sensors has also allowed for the use of EMTS in tightly controlled cardiac mapping and pulmonary applications.

Adaptive optics

Adaptive optics (AO) is a technology used to improve the performance of optical systems by reducing the effect of wave front distortions: it aims at correcting the deformations of an incoming wave front by deforming a mirror in order to compensate for the distortion. It is used in astronomical telescopes and laser communication systems to remove the effects of atmospheric distortion, in microscopy, optical fabrication and in retinal imaging systems to reduce optical aberrations. Adaptive optics works by measuring the distortions in a wave front and compensating for them with a device that corrects those errors such as a deformable mirror or a liquid crystal array.



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APPLICATIONS OF SENSOR SYSTEM

Automotive Sensor Applications

Position sensor

Position sensor is a device that can detect the movement of an object and converts these into signals suitable for processing, transmission, or control. Custom position sensing solutions are available featuring core technologies, including inductive, potentiometric, magneto resistive, hall effect, reed switch, electrolytic and capacitive sensing. Sophisticated designs and manufacturing techniques provide reliable and cost effective solutions for a broad range of harsh applications such as automotive, power generation, subsea, hydraulics, medical, HVACR, process controls, factory automation, security systems, military/aerospace and nuclear.

Pressure sensor

A pressure sensor is a device that senses pressure and converts it into an electric signal where the amount depends upon the pressure applied. Based on piezoresistive Microelectromechanical (MEMS) and silicon strain gauge (Micro fused, Krystal Bond) technology, sensors measure everything from inches of water column (<5 mbar) to 100K psi (7K bar). Sophisticated design and advanced manufacturing techniques create reliable cost-effective solutions for medical, HVACR, off-road, heavy equipment and general industrial applications.

Humidity sensor

Based on robust patented capacitive technology, these humidity sensors provide accurate measurement of dew point and absolute humidity by combining relative humidity and temperature measurements. Sensors are qualified for the most demanding applications, including automotive, heavy truck, aerospace and home appliances.

Fluid Property Sensors

Tuning fork technology is coupled with efficient software algorithms for accurate measurement of viscosity, density and dielectric constant. Dedicated applications include oils (engine, hydraulic, transmission), fuels, fluid monitoring, and others. Our urea quality sensors, based on Near Infra-Red (NIR) technology or ultrasonic measurement perform an analysis of the Diesel Exhaust Fluid (DEF) fluid to provide urea concentration and secure misfiling protection to the Selective Catalytic Reduction (SCR) systems.

Temperature Sensors

Temperature Measurement Modules. Thermopile infrared (IR) non-contact temperature measurement modules combine infrared temperature sensors with a variety of signal conditioning and output options. Custom thermocouple infrared modules are available.

Digital temperature sensors provide high measurement accuracy accompanied by low power consumption and user friendly system integration capability. They are ready-to-use with factory-set calibration coefficients which makes them a suitable replacement of complex circuitries for temperature sensor conditioning.

Environment Monitoring Sensor Application

We provide accurate and rugged instruments for monitoring natural waters or managing water processes. Highly accurate and precise, rugged and reliable instruments meet the most demanding requirements for monitoring surface waters, ground waters, estuary and ocean waters, and for

managing drinking water, wastewater, storm water, and landfill Leachate, agricultural, and hydropower systems.

General Industrial Sensor System

Industrial machinery, power and utilities, telecom, instrumentation, vending equipment, semiconductor and security equipment by offering a broad range of pressure transducers, liquid level sensors, accelerometers, LVDT/RVDT's, inclinometers, string and linear/rotary potentiometers, load cells, temperature, torque sensors, and a full range of interface electronics. The pioneering IC Sensors MEMS (micro electro-mechanical systems) technology and the Schaevitz inductive position sensors.

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