Nanyang Polytechnic

School of Information Technology

Course : Diploma in Infocomm & Security (ITDF12)

Module : Sensor Technologies and Project (ITP272)

Tutorial : Sensor Characteristics

Objectives:

- Understand what is Full Scale Input (FSI) of a sensor
- Understand what is Accuracy of a sensor
- Understand what is Dead Band of a sensor
- Understand what is Resolution of a sensor
- Learn how to choose the most suitable sensor based on given requirements and characteristic of individual sensors

Tutorial

Instruction:

Read Up on Lecture Sensors Fundamentals - Sensor Characteristics.

Provide your answer on A4 paper and **submit** to your tutor.

Question 1

Wonder Sensor PTE LTD tasked you to select an ultrasonic sensor for their new smart monitoring system with the following requirements.

- Detects any person as far as 100 m away
- Updates real time display every 4 m changes in distance
- Turns on all spot light when the person is 20 m away. It does not need to monitor if person < 20 m away
- Allows a maximum error of ±1 m

(a) List down the sensor characteristic specifications

(b) You are given sensors with the below characteristics. Select a suitable sensor for this.

	Sensor A	Sensor B	Sensor C	Sensor D
FSI	150 m	200 m	200 m	250 m
Accuracy	0.5 %	0.4 %	0.25%	0.5%
Dead Band	None	0 - 15 m	120 - 130 m	None
Resolution	5 % FSI	2 % FSI	2.5 % FSI	1% FSI

- Compute all absolute values for the sensor characteristics
- Justify how the selected sensor meets all requirements
- List down why other sensors are not suitable

==End of Practical_Tutroial==