EN2532 Robot Design and Competition

Laboratory Sheet-Practical No: 3

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1. Test your setup by placing an object in front of the sensor and varying its distance.
   i. How does the voltage change as you vary the distance?

Voltage decreases when we increase the distance between object and the sensor. We got 2.5V at 20 cm and it decreased to 0.66V when the object is at 100cm.

   ii. At a constant distance, how stable is the voltage?

At 50 cm, we got 1.1876 to 1.1881 voltage readings range. Therefore the voltage reading was bit unstable at the third decimal place.

2. Program the microcontroller using the code "Sharp sensor reading with smoothing" given in the appendix 2
   i. Place the object at a constant distance and observe the stability of the voltage.
      a) Stability increased or decreased?

noticebly increased

      b) Reason for observation (refer the code)?

The second code uses median of 10 samples instead of outputting individual samples as the first code. So this increased the stability up to the fourth decimal place.

   ii. Fill the following table

Distance from sensor (cm)	A2D converter reading	Distance from sensor (cm)	A2D converter reading
05	310	20	199
10	230	30	260
15	185	40	360
18	190	50	470

   iii. Find the maximum distance that the sensor can read by varying the distance of the object smoothly around the suspected maximum value.

1850mm

Maximum distance that the sensor can accurately measure was 900mm. But we could go up to 1850mm as the maximum value.