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Proximity Sensor Measurements – Short Report
X-Cali

Measurement: Burak SEZGİN, Data extraction: Taha DOĞAN

HC-SR04 model of ultrasonic proximity sensor is used to sense the maze walls. Before the integration of proximity sensors, they are tested. The test specifications are provided below.

Environment : Living Room, silent
Driver : RaspberryPi3
Obstacle Object : a thick book
Temperature : 24℃

	Measurement #1	Measurement #2	Measurement #3	Measurement #4	Measurement #5
Real Distance	Measured Distance	Measured Distance	Measured Distance	Measured Distance	Measured Distance
5	5.9	5.4	5	5.2	5.2
10	9.7	9.67	9.74	9.74	9.71
15	15.2	15.16	15.16	15.5	15.18
20	19.62	19.58	19.62	19.58	19.6
25	24.56	24.56	24.64	24.59	24.61
30	29.15	29.7	29.15	29.57	29.14
35	34.12	34.21	34.16	34.12	34.12
40	39.41	39.44	39.32	39.42	39.39
45	43.92	43.88	43.88	43.93	43.9
50	49.7	48.82	48.88	48.15	48.22
55	53.71	53.68	53.64	53.68	53.59
60	58.92	58.93	59.36	59.77	58.92
65	63.18	63.6	63.5	63.56	63.43
70	68.53	68.1	68.18	68.48	68.12
75	73.74	74.19	74.6	73.76	73.28

Table 1: Measurement results of HC-SR04 model prox. sensor with given measurement specifications

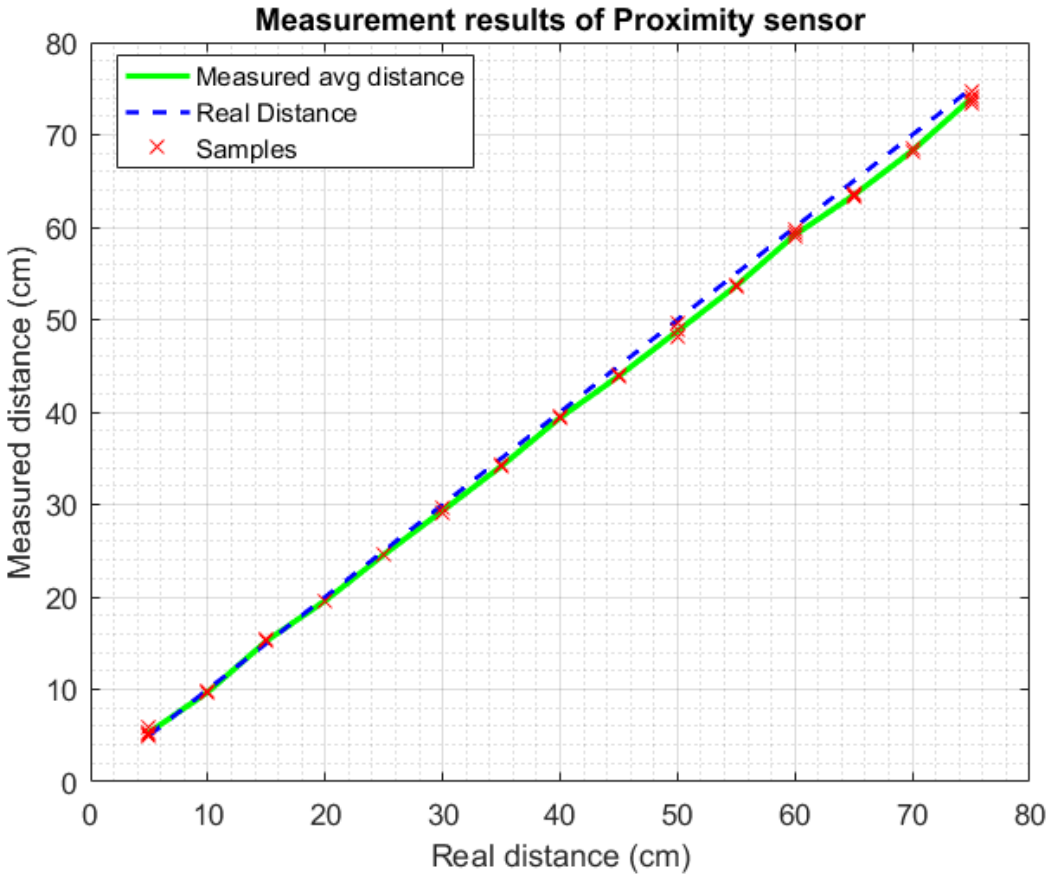

Figure 1: Measurement Results of HC-SR04 proximity sensor

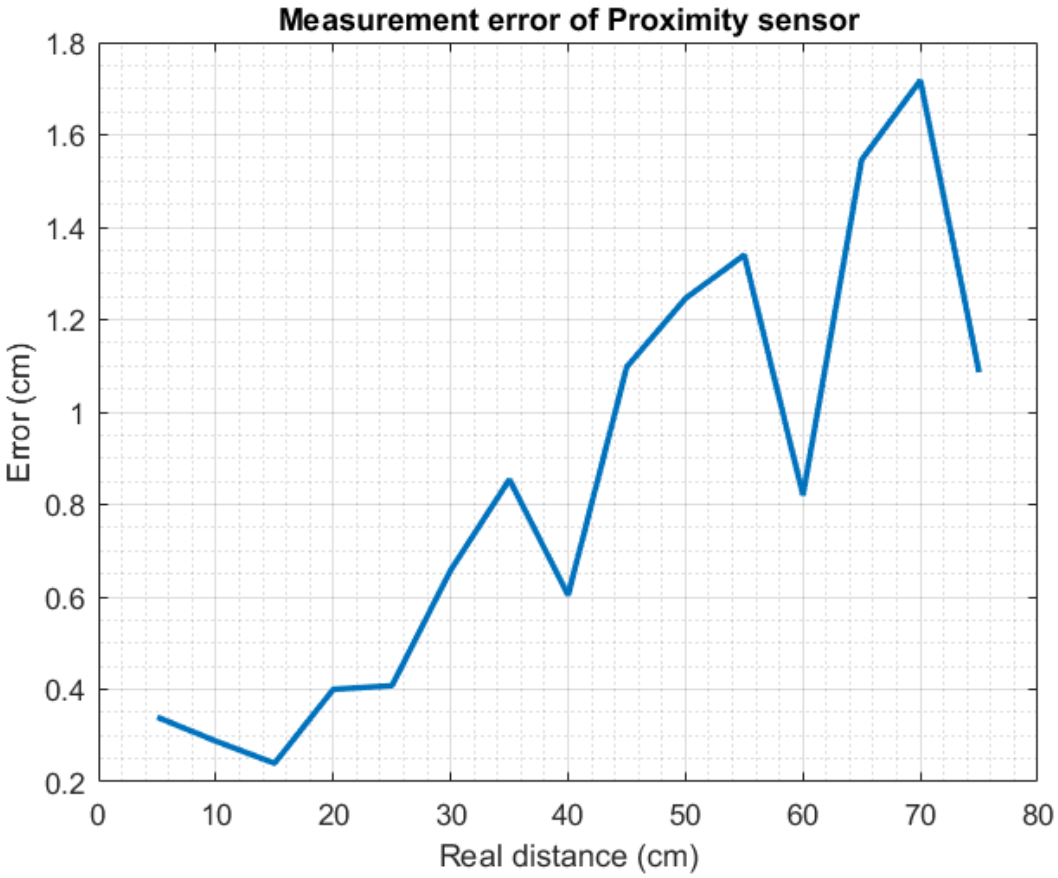

Figure 2: Measurement error of HC-SR04

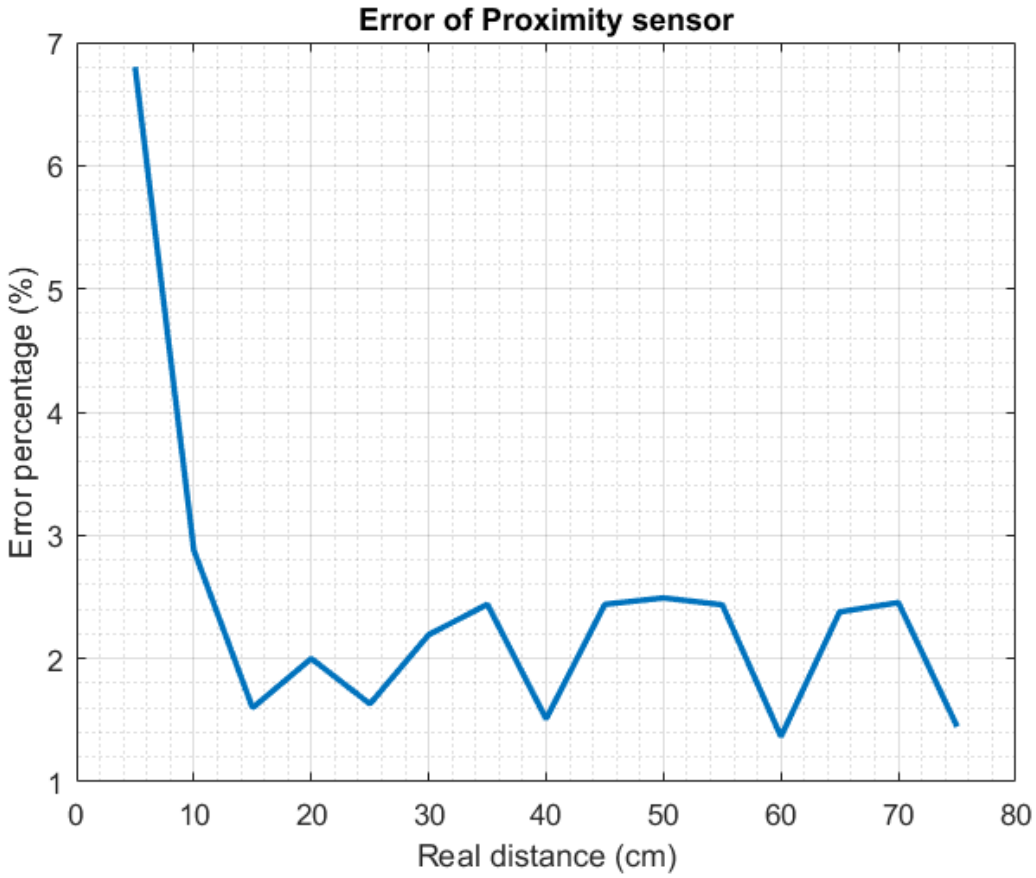

Figure 3: Error Percentage of HC-SR04

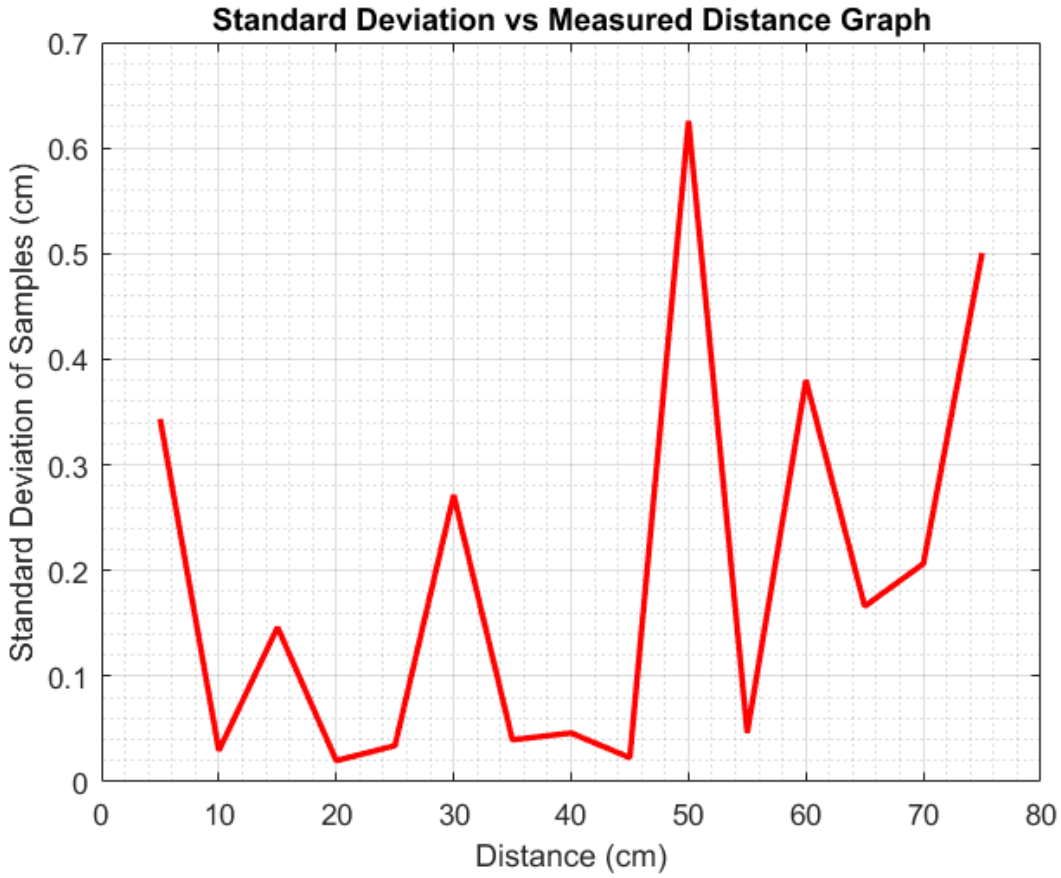

Figure 4: Standard Deviation of HC-SR04