

School Of Engineering- University Of Guelph

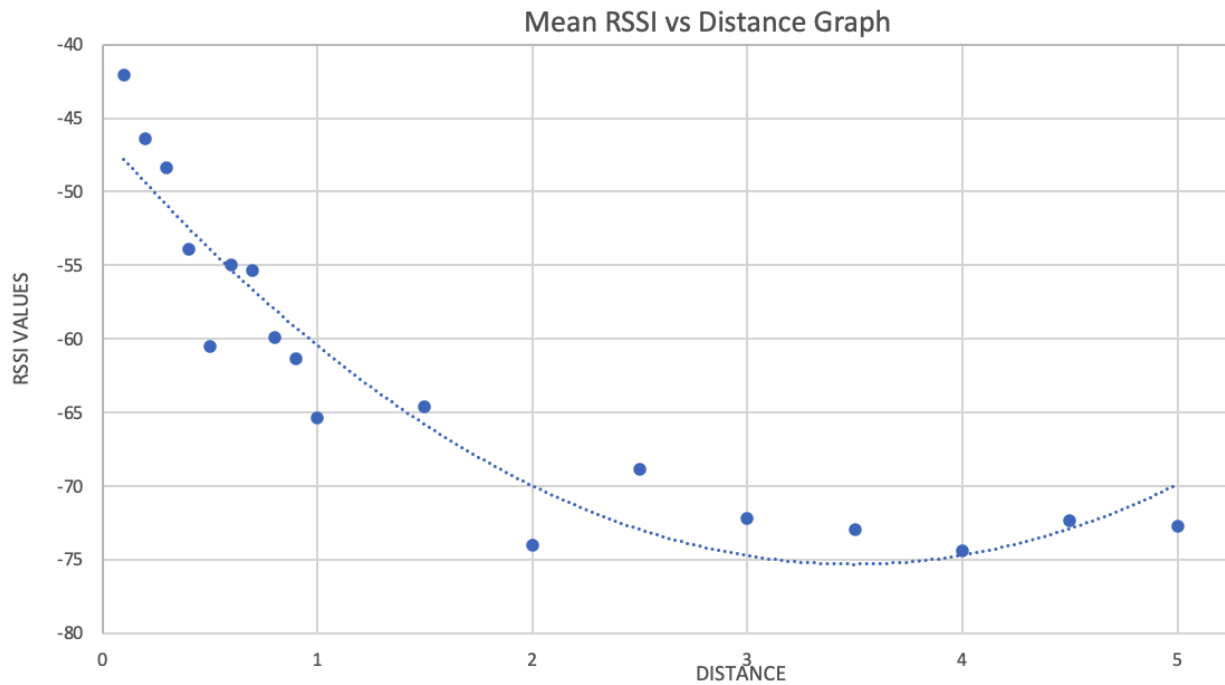
Lab 4: Localization

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- 1- The following figure presents the relationship between the RSSI values and the distance between the nodes.



The equation used to convert the RSSI values into distance is given below;

$$\text{RSSI} = -10 \times n \log_{10} d + C,$$

N value was found to be 2.007 & C value was found to be -61.78 using this equation

- 2- The formula used to calculate the error was $\text{Error} = \sqrt{(\text{Calculated } x - \text{Real } X)^2 + (\text{Calculated } y - \text{Real } Y)^2}$. The table below summarizes the error values calculated for the 6 different files.

File	Error	(x,y)calc	(x,y) real
T1	1.94037644	(1.433964, 1.929934)	(1.635,0)
T2	1.70433008	(1.637292, 2.083882)	(3.27,1.595)
T3	1.15229527	(1.592738, 1.838480)	(1.635, 2.99)
T4	0.74211203	(-1.284842, 1.903737)	(-0.61, 1.595)
T5	2.14088784	(1.314850, 2.013371)	(3.22, 2.99)

T6	1.83175914	(1.678432, 1.982782)	(0.02, 1.205)
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3- The following table summarizes the new estimations after the 4th step. The K values and the new n and c values are presented below:

File	Error	K Value	(n,c)
T1	1.240373	6	(1.764, -58.29)
T2	1.431849	4	(1.692, -63.82)
T3	1.238527	4	(1.592, -62.47)
T4	0.915103	8	(2.142, -59.93)
T5	2.117684	2	(2.585, -58.71)
T6	1.875914	6	(1.432, -62.782)