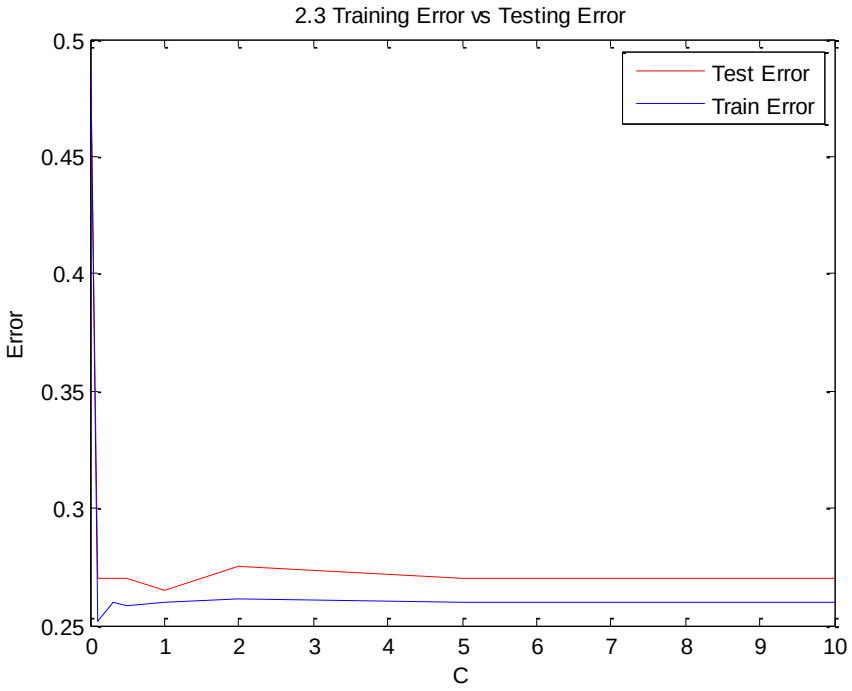
Alvin Chou
alvincho
10601 HW4

2.2) Confidence Interval increaseas with higher partitions and lower significance percentage (ie 95% yields higher confidence interval than 99%).

| | 2 Partitions | | 10 Partitions | |
|---|---|---|---|---|
| | 95% | 99% | 95% | 99% |
| Accuracy | 0.75 | 0.75 | 0.85 | 0.85 |
| Lower Interval | 0.6651 | 0.6385 | 0.6935 | 0.6443 |
| Upper Interval | 0.8349 | 0.8615 | 1.0065 | 1.0557 |

2.3)




**Optimal C occurs when C = 0.1**

2.4) From t-test analysis, the P-value and CI of all tests (left, right, and both) are within the 95% significance range, meaning that the null hypothesis CANNOT be reject as the difference is not deemed to be significant. As such, there cannot be a determination made as to which algorithm is better.

| k | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | avg |
|---|---|---|---|---|---|---|---|---|---|---|---|
| NN Test Accuracy | 92.67 | 96.00 | 95.33 | 92.67 | 92.33 | 92.00 | 93.33 | 94.67 | 91.33 | 93.00 | 93.33 |
| NN Train Accuracy | 99.30 | 99.26 | 99.48 | 99.04 | 99.48 | 99.33 | 99.44 | 99.59 | 99.30 | 99.26 | 99.35 |
| LR Test Accuracy | 96.97 | 96.97 | 98.48 | 98.48 | 96.97 | 98.48 | 98.48 | 98.48 | 96.97 | 96.97 | 97.73 |
| LR Train Accuracy | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 98.99 | 100.00 | 99.90 |

| | Confidence Interval | | Hypothesis | P-Value |
|---|---|---|---|---|
| Left | -INF | 7.375 | 0 | 0.5 |
| Right | 5.7563 | INF | 0 | 0.5 |
| Both | 5.5669 | 7.5644 | 0 | 1 |