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CS251

Percolation Analysis

What differences can be found in terms of execution time?

When examining under a smaller range of N, the two algorithms produce close runtimes. At n=50, the two values differ by only 0.001067 seconds, which is well within one standard deviation of both values (see raw values below). Only after n=250, do the differences becomes noticeable. At n=250, the difference is 1.003667 seconds, which is not within one standard deviations of either the slow or fast algorithm. This effect is even more noticeable at n=500, the difference then is 28.8218 seconds. This difference is almost within two standard deviations of the slow algorithm, but nowhere near two standard deviations of the fast algorithm.

In summary, the time difference between these two algorithms can only truly be recognized with larger n-values. With smaller n-values, the differences between the two algorithms is very small. In some use cases, the difference between the two algorithms, with a small n-value, could be negligible.

Unlike, the running time plot, it’s very hard to visualize the difference between the two algorithms. The mean threshold for each are very close and within one standard deviation of each other for every n-value. The real difference between the two algorithms is the runtime, not their estimates.