Project 2-1

CSC333 7/11/15

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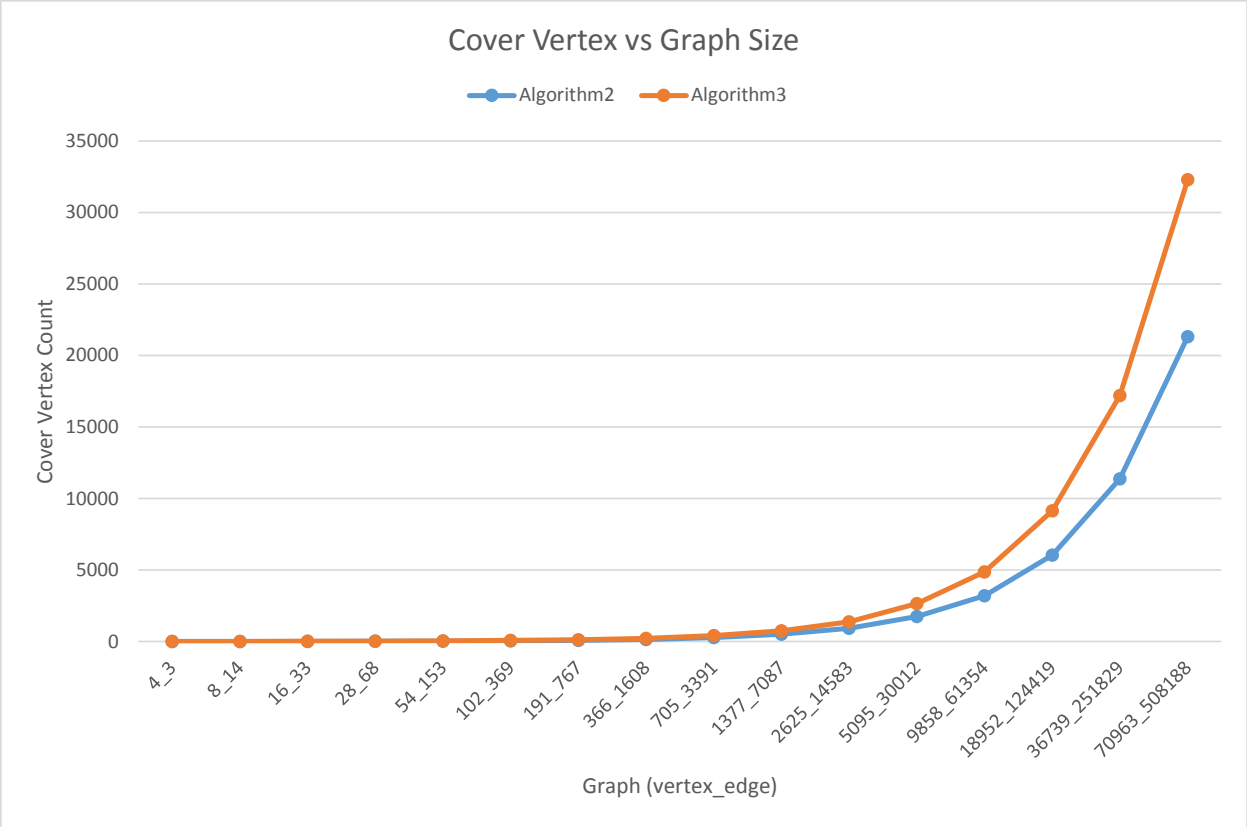

Figure 1. Cover Vertex vs Graph Size for Algorithm2 (vertex greedy) and Algorithm3 (edge greedy)

After collecting this data from running my program I was able to notice some consistent trends in the output data. The accuracy of a vertex greedy algorithm was greater than the edge greedy algorithm. This difference become much more apparent as the graph size grew. The data at the end of the graph shows a difference in vertex quantity by almost 25%. The trend shows that as the graph grows the difference would increase as well.

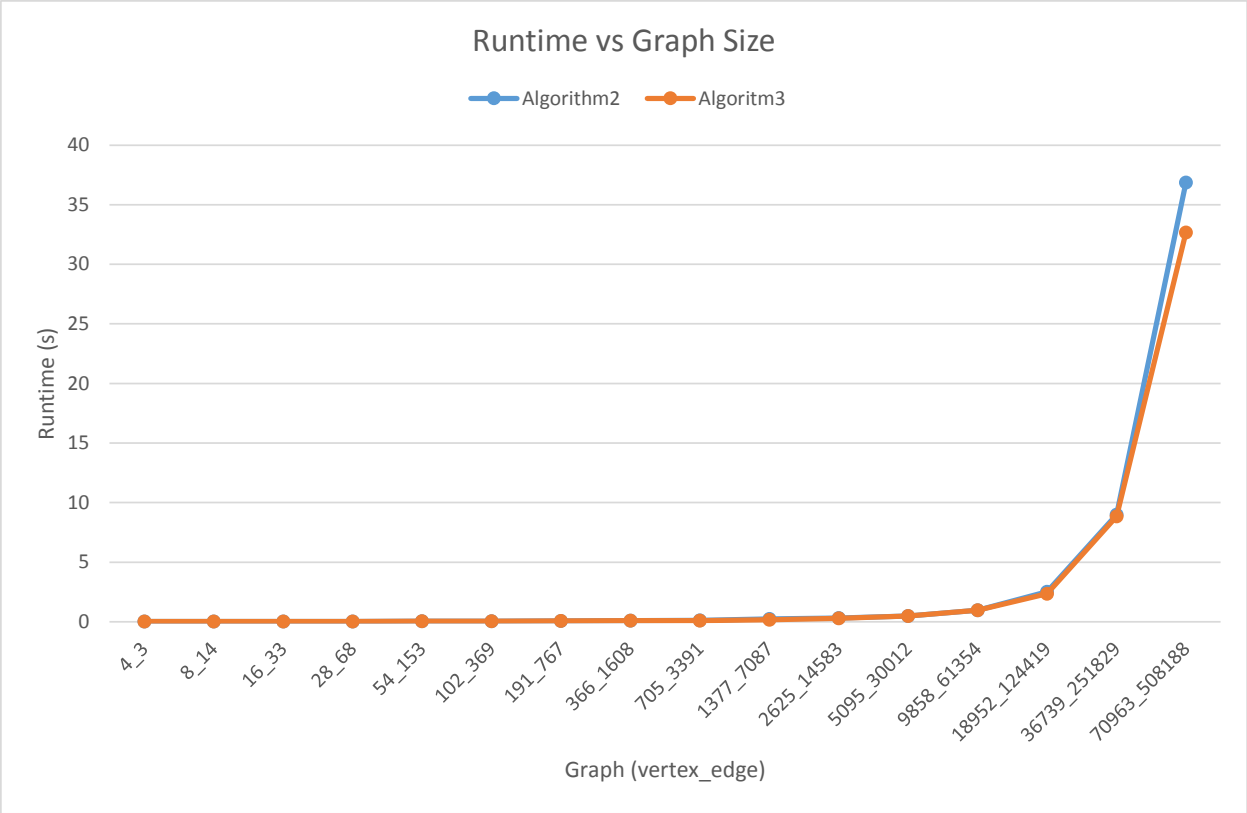

Figure 2. Runtime vs Graph Size for Algorithm2 (vertex greedy) and Algorithm3 (edge greedy)

For runtime the difference was much smaller. The trend shows that vertex greedy algorithm takes slightly longer to run than the edge greedy algorithm. The difference in runtime would increase rapidly as more extreme graph sizes are implemented.

Algorithm2 provides a more accurate answer at the cost of runtime. This is due to the vertex greedy method removing the largest amount of edges each iteration per vertex. The cost of this however is that amount of edges per vertex needs to be tallied each time before a vertex is removed. The extra time needed to tally edges to vertices adds up as the graph grows. That is the cause for the growing difference in runtime as the graph size increases between the two algorithms.