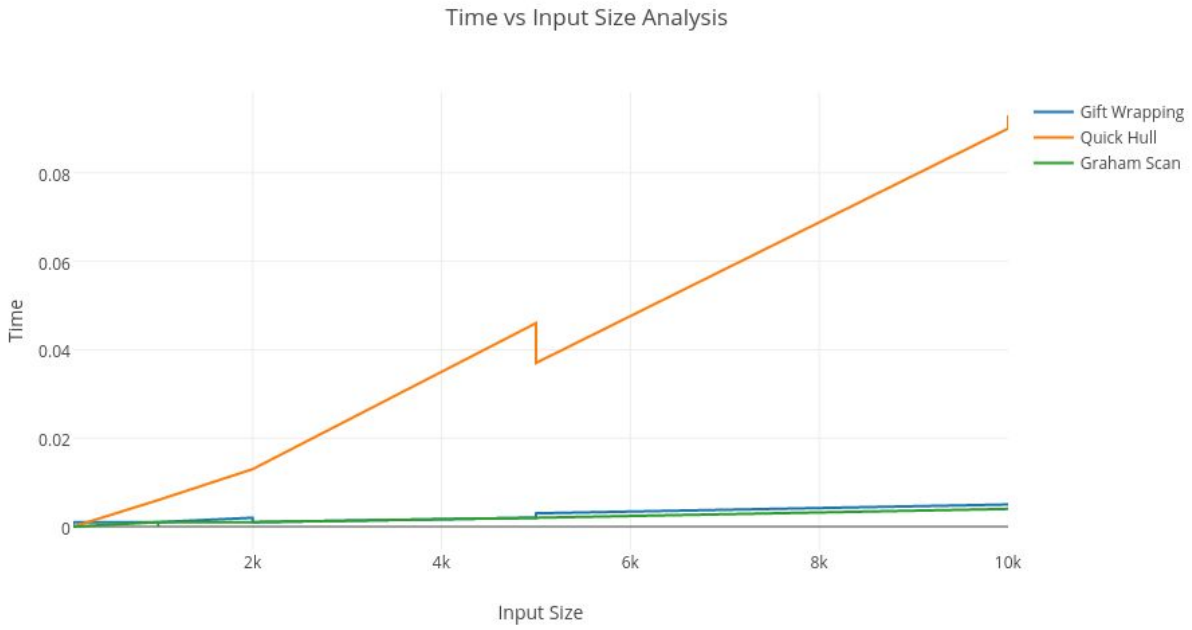
Assignment 4

Chart showing Time Analysis of various Convex Hull Algorithms



Data Table for Time Analysis

Input Size	Gift Wrapping	Graham Scan	Quick Hull
100	0	0	0
100	0	0	0
100	0.001	0	0
1000	0.001	0	0.006
1000	0.001	0.001	0.006
1000	0.001	0	0.006
2000	0.002	0.001	0.013
2000	0.002	0.001	0.013
2000	0.001	0.001	0.013

5000	0.003	0.002	0.046
5000	0.003	0.002	0.046
5000	0.003	0.002	0.037
10000	0.005	0.004	0.09
10000	0.005	0.004	0.091
10000	0.005	0.004	0.093

Special Case Analysis

1) Gift Wrapping Algorithm

- Input Size: 100
  Convex Hull Size: 100
  Execution Time: 0.001

- Input Size: 1000
  Convex Hull Size: 1000
  Execution Time: 0.054

- Input Size: 2000
  Convex Hull Size: 2000
  Execution Time: 0.08

- Input Size: 5000
  Convex Hull Size: 5000
  Execution Time: 0.499

- Input Size: 10000
  Convex Hull Size: 10000
  Execution Time: 1.891

2) Quick Hull

- Input Size: 100
  Convex Hull Size: 100
  Execution Time: 0.001

- Input Size: 1000
  Convex Hull Size: 1000
  Execution Time: 0.009

- Input Size: 2000
  Convex Hull Size: 2000
  Execution Time: 0.022

- Input Size: 5000
  Convex Hull Size: 5000
  Execution Time: 0.113

- Input Size: 10000
  Convex Hull Size: 10000
  Execution Time: 0.201

3) Graham Scan

- Input Size: 100
  Convex Hull Size: 100
  Execution Time: 0

- Input Size: 1000
  Convex Hull Size: 1000
  Execution Time: 0

- Input Size: 2000
  Convex Hull Size: 2000
  Execution Time: 0.001

- Input Size: 5000
  Convex Hull Size: 5000
  Execution Time: 0.002

- Input Size: 10000
  Convex Hull Size: 10000
  Execution Time: 0.004