Improvement for Project #2

Duane Johnson

For this improvement, I added several user interface features to the project that would be useful for:

1. Visualizing the state of the underlying data
2. Manipulating the underlyine data
3. Experimenting with solving smaller subsets of the Convex Hull problem

As an example, the user may double-click any point on the graph to make it a "highlighted point" (see figure 1). If several points are highlighted, the system outlines the points by finding the centroid and then sorting the points in a clockwise fashion. The user may also click and drag any point on the graph to a new location.

The user may also right-click any point to show a context-sensitive menu (see figure 1). Highlighted points may be unhighlighted or removed. Groups of highlighted points may be "added as a hull" and later used to test the hull-combining algorithm (see figure 3).

Once the user has highlighted several points, the points may be saved as a "hull" using the context sensitive menu. Two or hulls may be combined using the "Combine Hulls" button at the bottom of the UI window (see figure 2).

Various groups of points can programmatically by highlighted or unhighlighted using the "Highlight and Connect" group of buttons. The user may also "reset" the graph so that all points and all states return to the original, as generated during the random point generation.
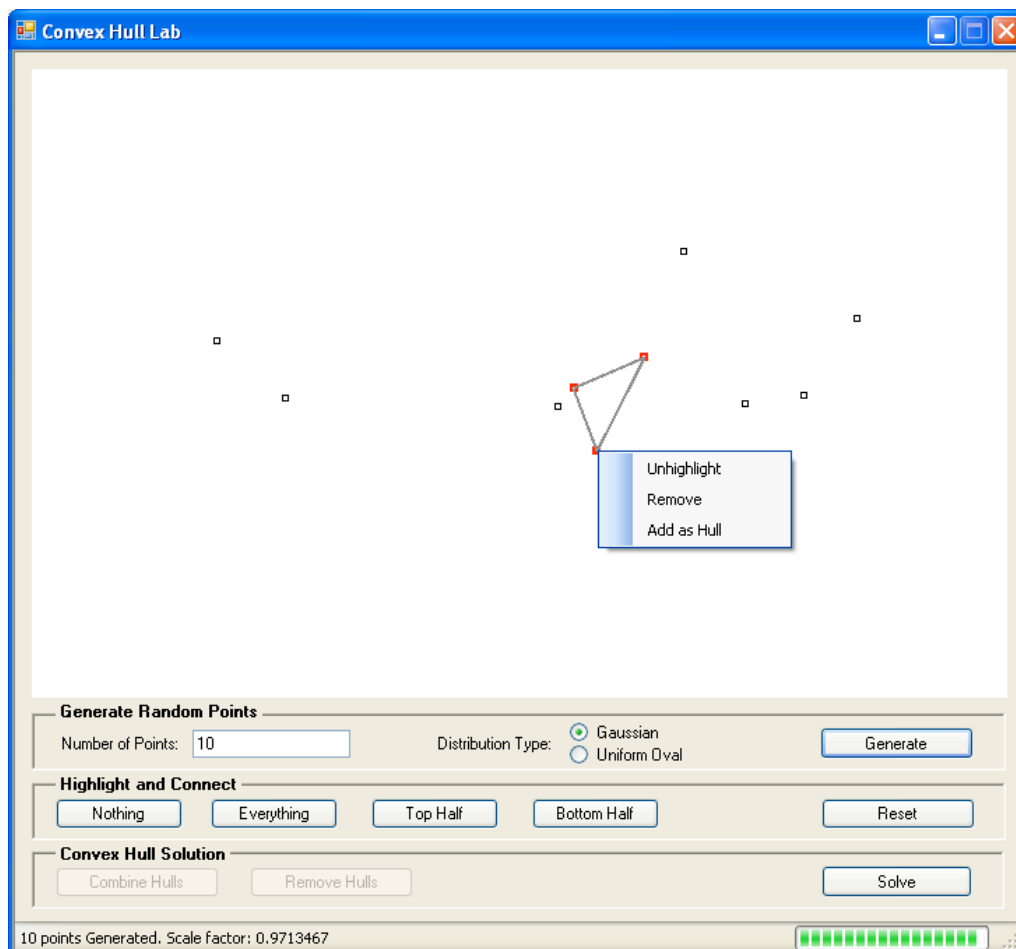

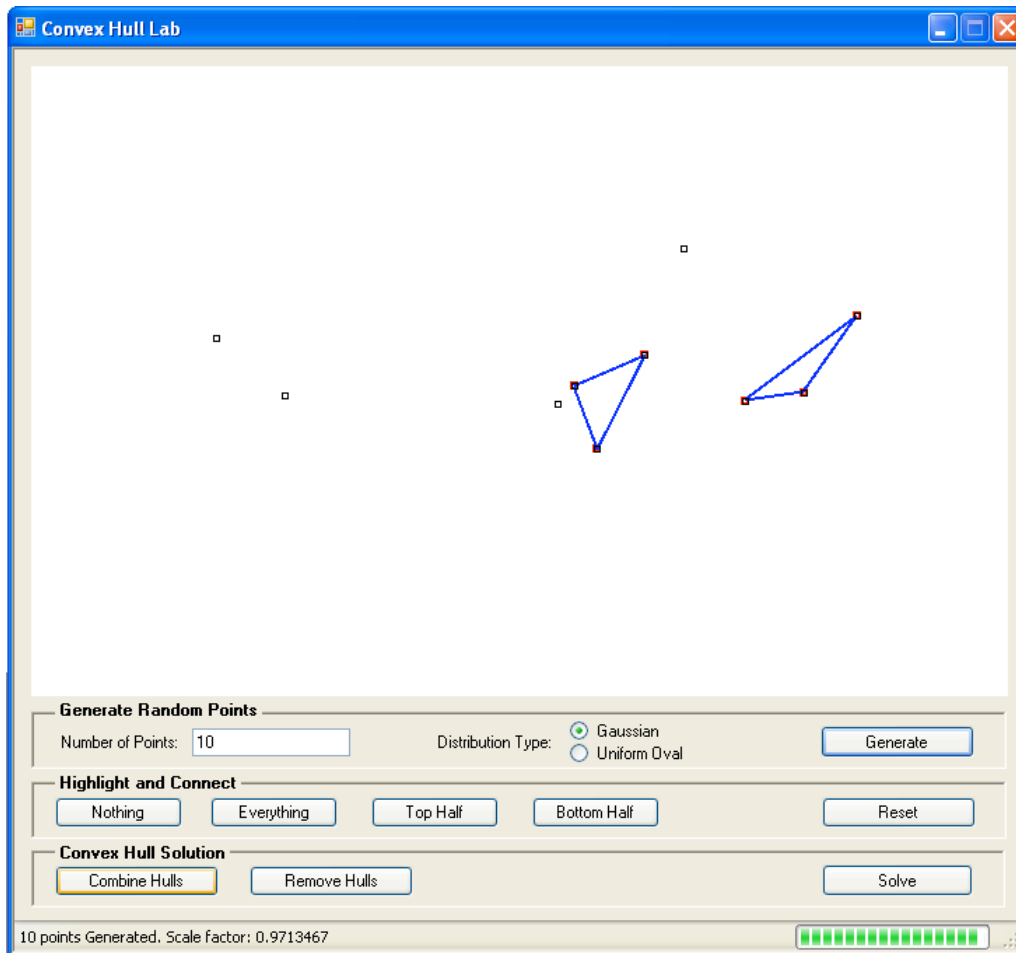Figure 1: Points may be highlighted. Context-sensitive menu.

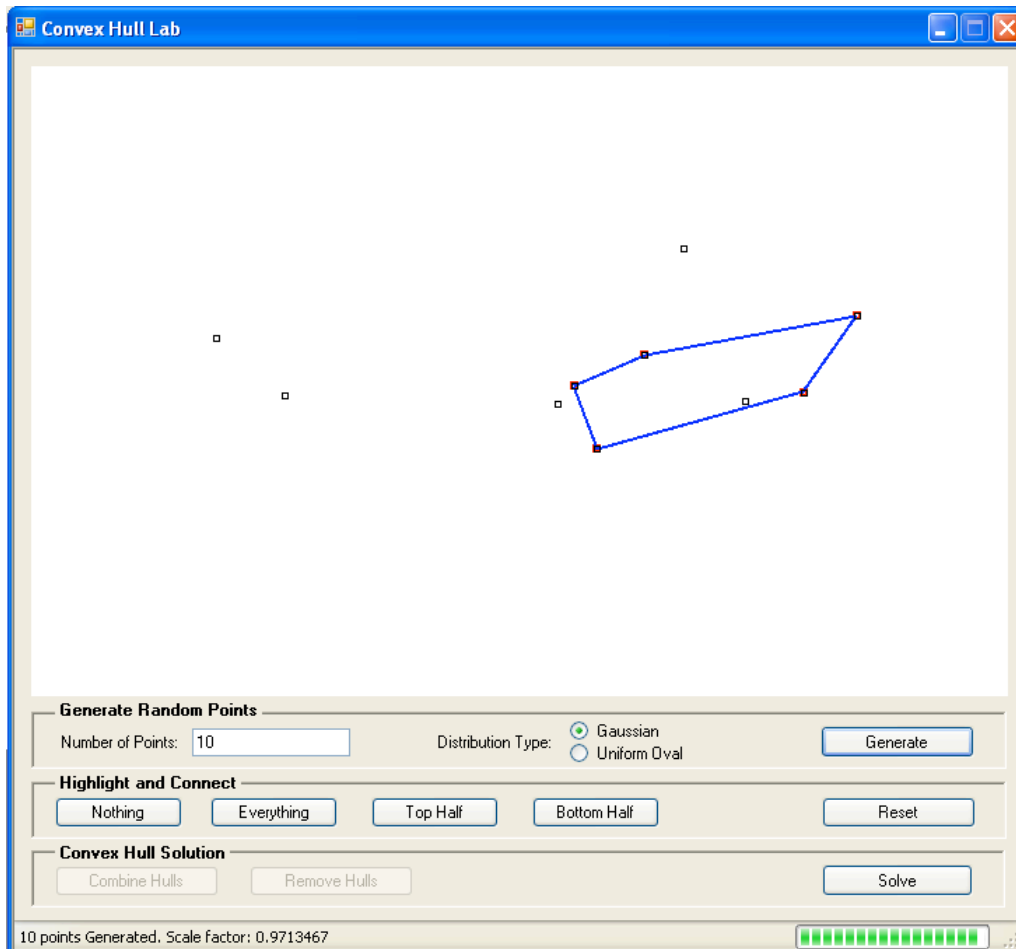Figure 2: Two hulls have been created. The "Combine Hulls" button is shown.

Figure 3: The two hulls have been combined.