Convex Hull

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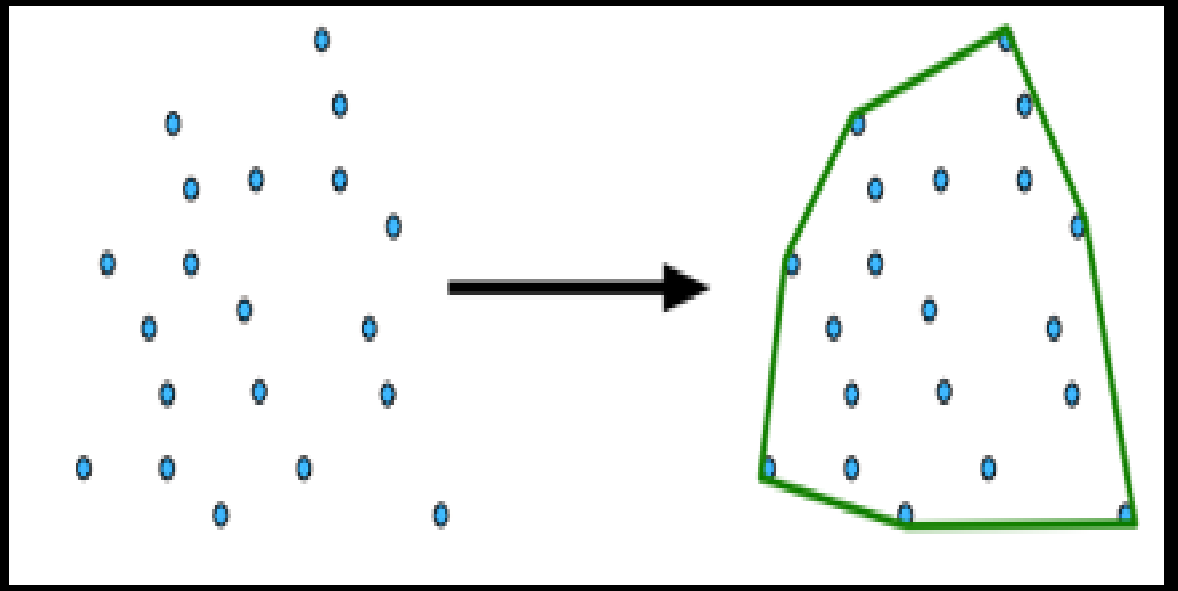
Convex Hull

Convex Hull for a given set of points is defined as the "Smallest Convex Polygon" for which all points either lie on the boundary or inside it...



Our Plan:

- Study **Divide and Conquer** approach

  -> Uisng tangent method while dividing the problem into sub-problems

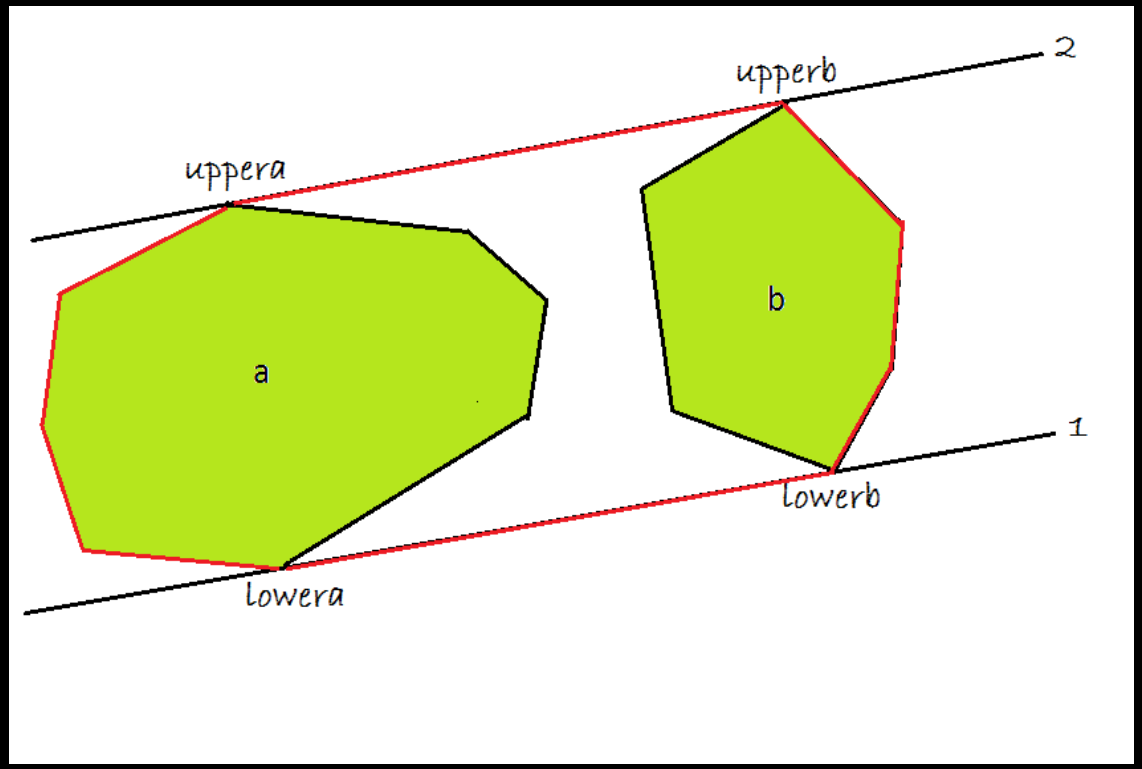
- Study **Output Sensitive** approach

- Testing the algorithms on **large data sets** from different sources like kaggle to measure scalabililty

Divide and Conquer:

- The algorithm divides the problem into two halves and draw tangents from two hulls we get and found the min. Boundary as required

- **TC** : O(n*log(n))

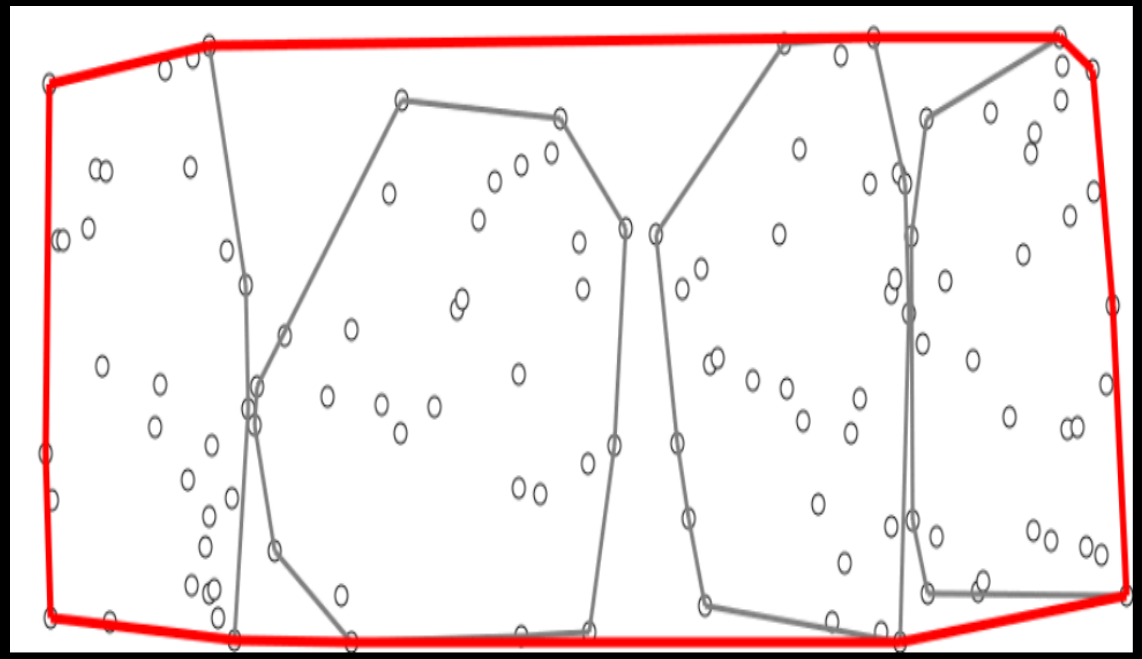


Output Sensitive Algorithm

- The running time of these algorithms depends on the size of the output, instead of, or an addition to, the size of the input.
- **Chan's Algorithm:**

  ->It runs in O(n*log(h)) time

  ->It is a combination of **Graham** and **Jarvis** algorithms



Applications

- Simple Vector Machine
- Collision Detection
- Tracking Disease Epidemic
- Nuclear/Chemical Leak Evacuation


Thank you!