01-C-02

Convex Hull

Extreme Edges

- Algorithm

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Identifying Extreme Edges

- Let EE = ∅

  For each directed segment pq

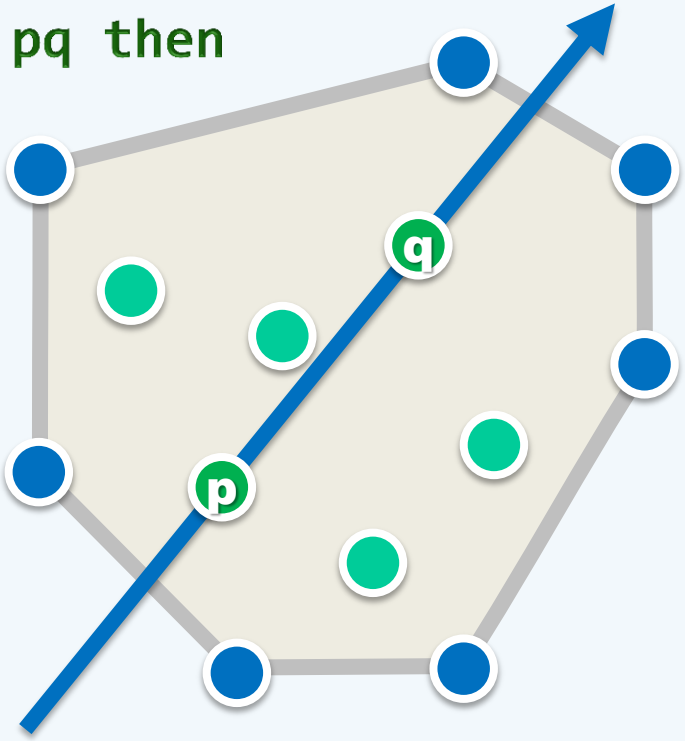
    If points in S\{p, q} lie to the same side of pq then

      Let EE = EE ∪ {pq}

- Complexity

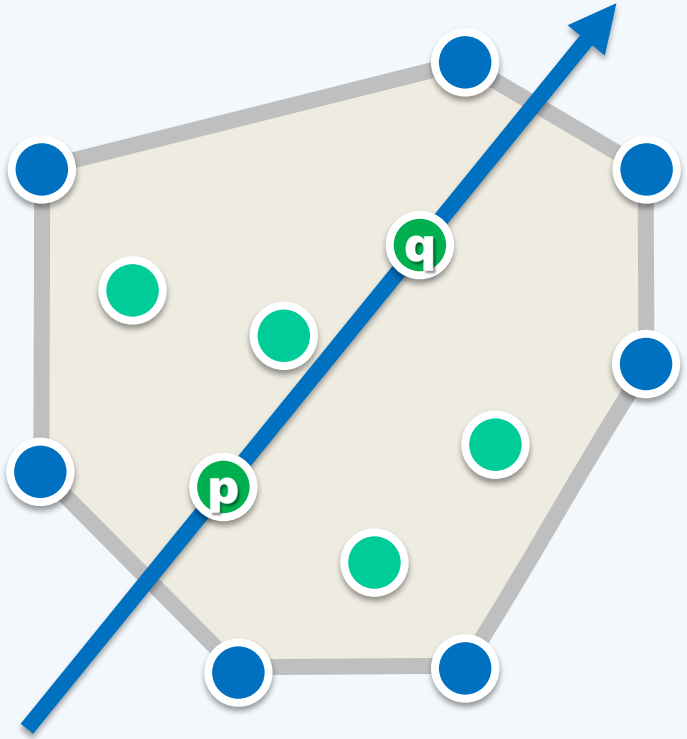
  = $O(n * (n - 1) * (n - 2))$

  = $O(n^3)$



Implementation (1/2)

```
❖ void markEE( Point S[], int n ) { //n > 2

    for ( int k = 0; k < n; k++ )

        S[k].extreme = FALSE;

    for ( int p = 0; p < n; p++ ) //test

        for ( int q = p + 1; q < n; q++ ) //each

            checkEdge( S, n, p, q ) ; //directed edge pq

}
```



Implementation (2/2)

```
❖ void checkEdge( Point S[], int n, int p, int q ) {
      bool LEmpty = TRUE, REmpty = TRUE;
      for ( int k = 0; k < n && ( LEmpty || REmpty ); k++)
         if ( k != p && k != q )
            ToLeft( S[p], S[q], S[k] ) ?
               LEmpty = FALSE :
               REmpty = FALSE ;
      if ( LEmpty || REmpty )
         S[p].extreme = S[q].extreme = TRUE;
   }
```