01-B-03

Convex Hull

Extreme Points

- In-Triangle Test

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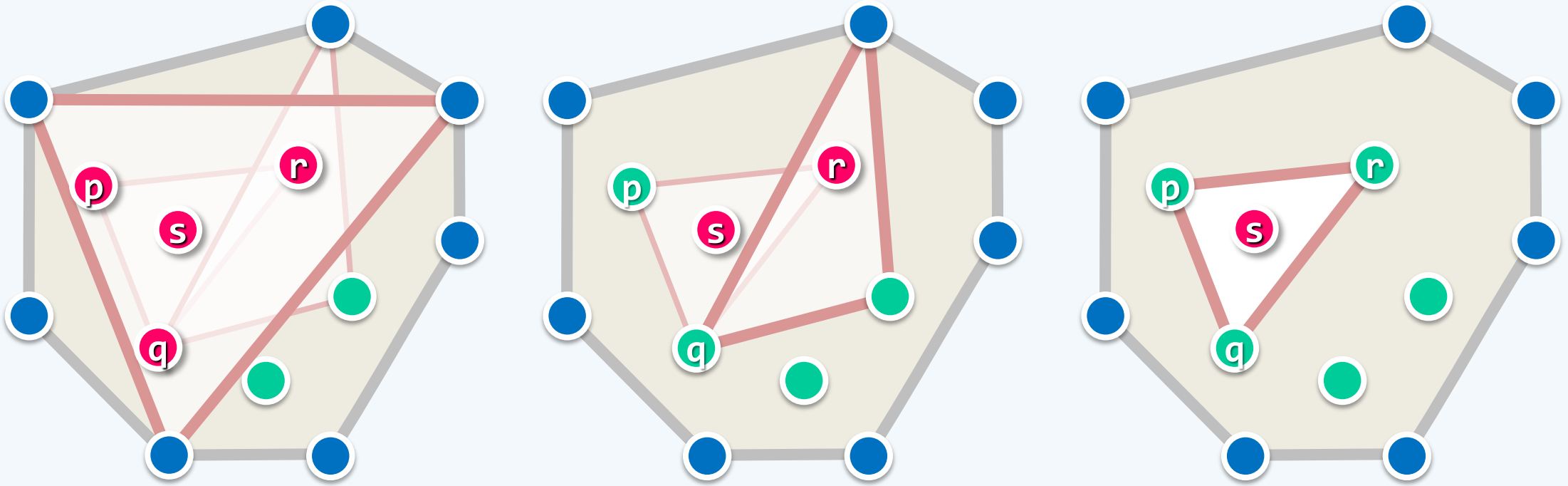
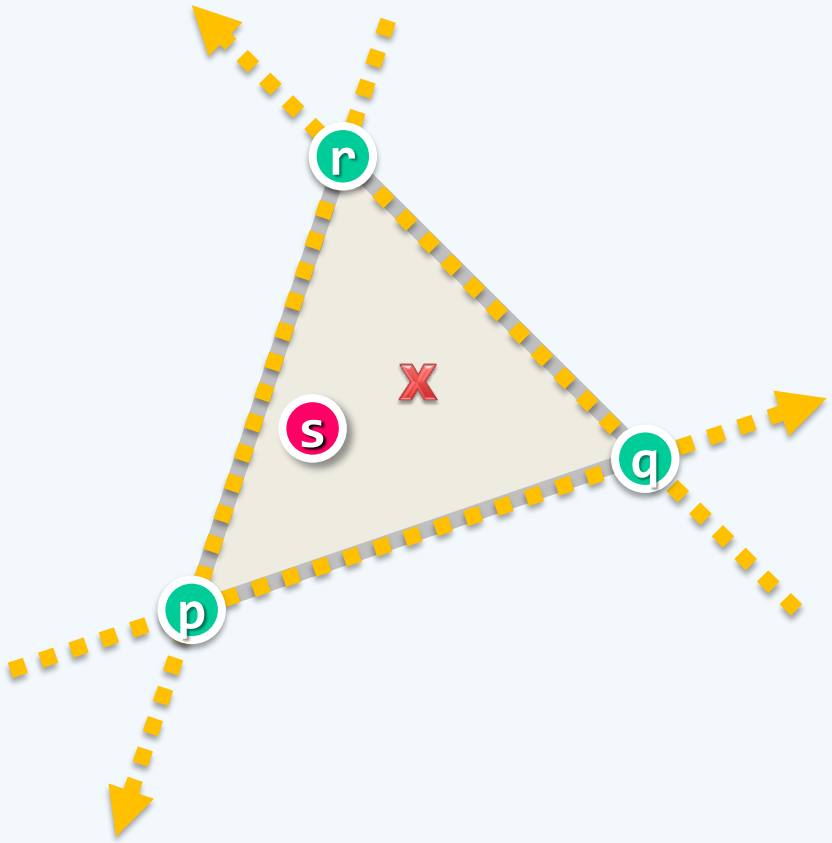
Excluding Non-extreme Points

❖ All EPs will be identified if

we test each point s against every potential triangle



Algorithm



Mark all points of S as `EXTREME`

For each triangle $\Delta(p, q, r)$

For each $s \in S \backslash \{p, q, r\}$

If $s \in \Delta(p, q, r)$ then

mark s as `NON_EXTREME`

Implementation

❖

```
void extremePoint( Point S[], int n ) { //n > 2
   for ( int s = 0; s < n; s++) S[s].extreme = TRUE;
   for ( int p = 0; p < n; p++ ) //O(n)
      for ( int q = p + 1; q < n; q++ ) //O(n)
         for ( int r = q + 1; r < n; r++ ) //O(n)
            for ( int s = 0; s < n; s++ ) { //O(n)
               if ( s==p || s==q || s==r || !S[s].extreme )
                  continue;
               if ( InTriangle( S[p], S[q], S[r], S[s] ) )
                  S[s].extreme = FALSE;
            }
}
```