

csci350: A computing perspective of GIS

Fundamental geometric primitives

Fundamental geometric primitives

- (signed) area of a triangle
- area of a polygon (convex or non-convex)
- orientation
 - point is left of line
 - collinearity: point is on line
 - betweenness: point a is on line and between points a and b
- segment intersection
 - proper and improper
- point in polygon

Techniques

- **Incremental construction**
 - convex hull
 - Delaunay triangulation
 - terrain simplification
- **Divide-and-conquer**
 - convex hull
 - closest pair of points
- **Line/plane sweeping**
 - rectangle intersection
 - line segment intersections
 - red-blue line segment intersection