

(Delaunay) Triangulation of a Non-convex Polygon + Points Inside

- Input data: file POINTS of the form

N	
B	
x_1	y_1
x_2	y_2
\vdots	\vdots
x_B	y_B
x_{B+1}	y_{B+1}
\vdots	\vdots
x_N	y_N

where

- N is the total number of points
- B is the number of points on boundary (generally a non-convex polygon)
- (x_1, y_1) to (x_B, y_B) are coordinates of boundary vertices ordered counter-clockwise
- (x_{B+1}, y_{B+1}) to (x_N, y_N) are coordinates of internal nodes
- Create a triangulation of this polygon and the interior nodes using a suitable method, e.g.:
 1. triangulate the non-convex polygon, e.g. according to [1], chapter 1
 2. then add the interior points one by one, e.g. according to [2], chapter 1
- OPTIONAL: if possible, make this a Delaunay triangulation, e.g. by iterative edge swapping according to [2], chapters 3 and 4
- You are also free to proceed differently, for example construct the Delaunay triangulation directly
- Output:
 - List of triangles, i.e. triplets of indices of points, with each triplet ordered counter-clockwise
 - OPTIONAL: list of edges (pairs of point indices) and/or list of edges of each triangle, etc.
 - OPTIONAL (RECOMMENDED FOR SANITY CHECKING): visualization
- **REFERENCES:**
 - [1] J. O'Rourke: *Computational Geometry in C*
 - [2] O. Hjelle, M. Dæhlen: *Triangulations and Applications*