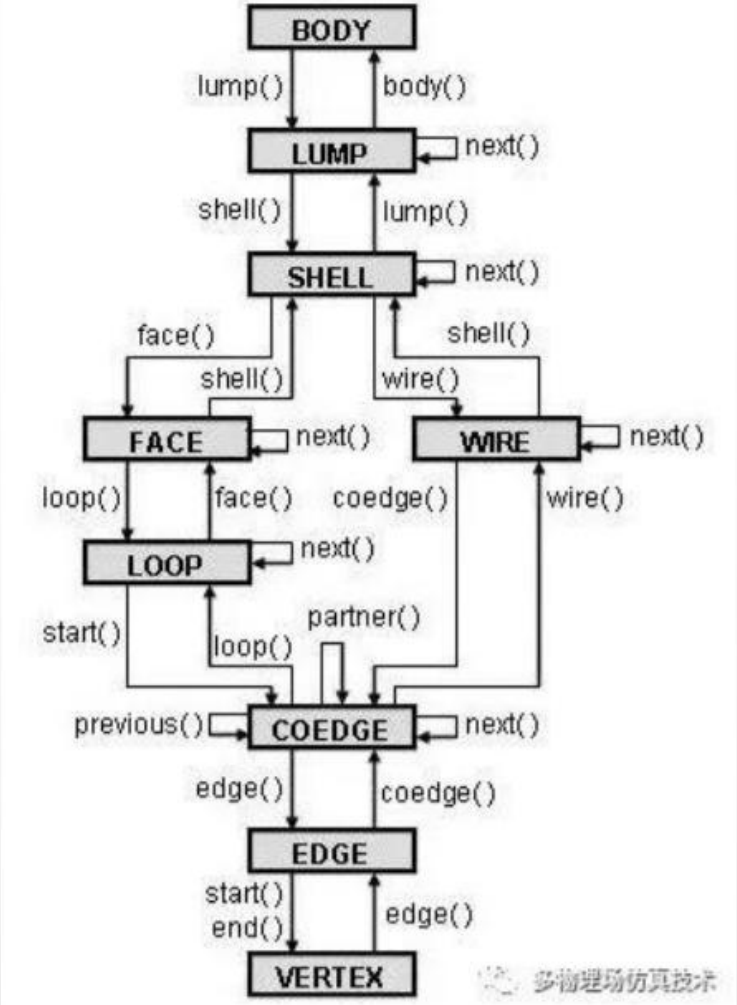
Advancing Front Method

研发

Facet(Tesslation) VS Mesh

- 1. Mesh element Size(global/local)
- 2. Mesh element quality
- 3. Mesh attribures
- 4. Mesh topology

BRep topology



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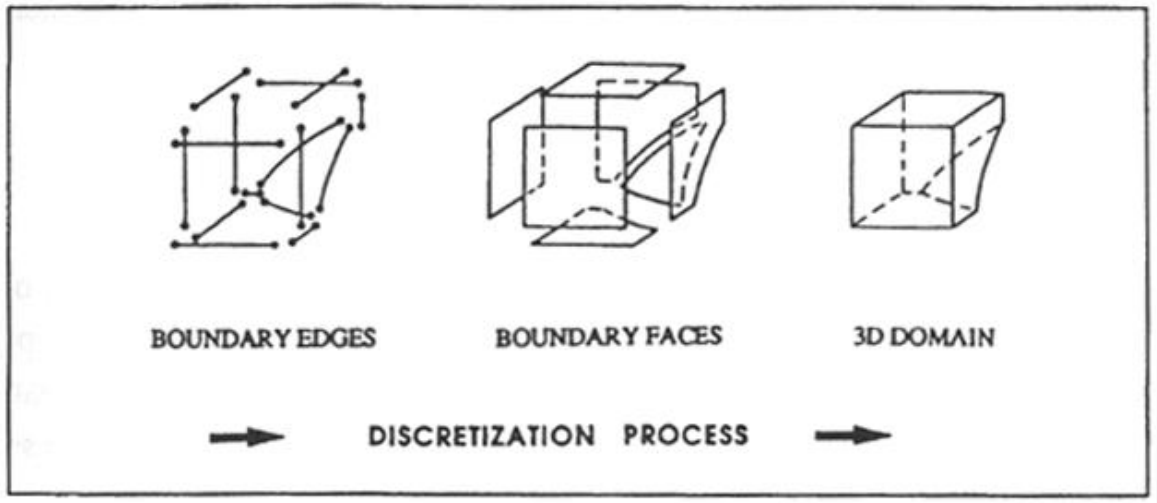
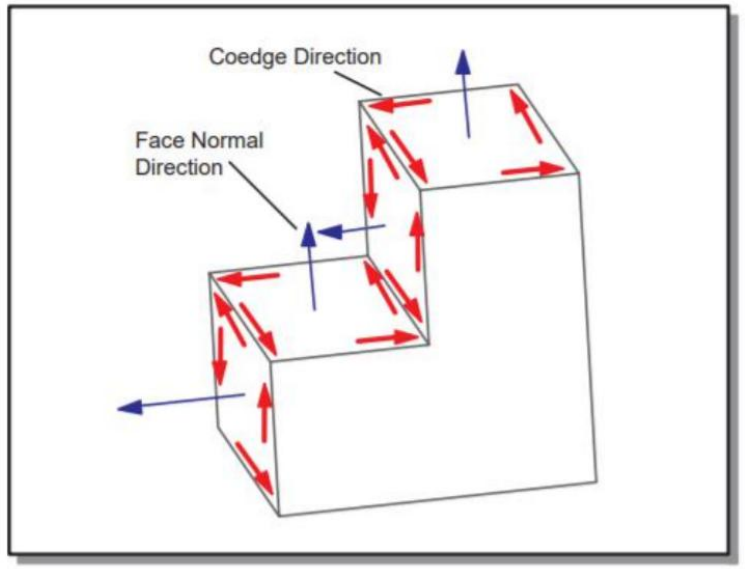
Input data

- BREP to face and edge



Topology



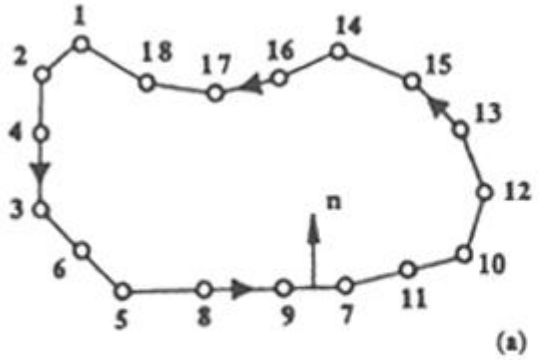
STEP

1. List candidate edges

Create nodes and seeding nodes

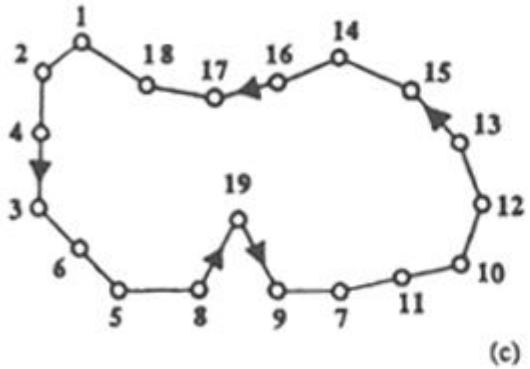
Parameter: global mesh size

Seeding: local mesh size



1	3	2	4	6	5	8	9	7
2	6	4	3	5	8	9	7	11
11	12	10	13	15	16	14	17	18
10	13	12	15	14	17	16	18	1

2. Insert node and remove candidate edge



ELIMINATED

ADDED

1	3	2	4	6	5		9	7		
2	6	4	3	5	8		7	11		
11	12	10	13	15	16	14	17	18	8	19
10	13	12	15	14	17	16	18	1	19	9

STEP

- 3. Control parameters:

3.1.Edge distance

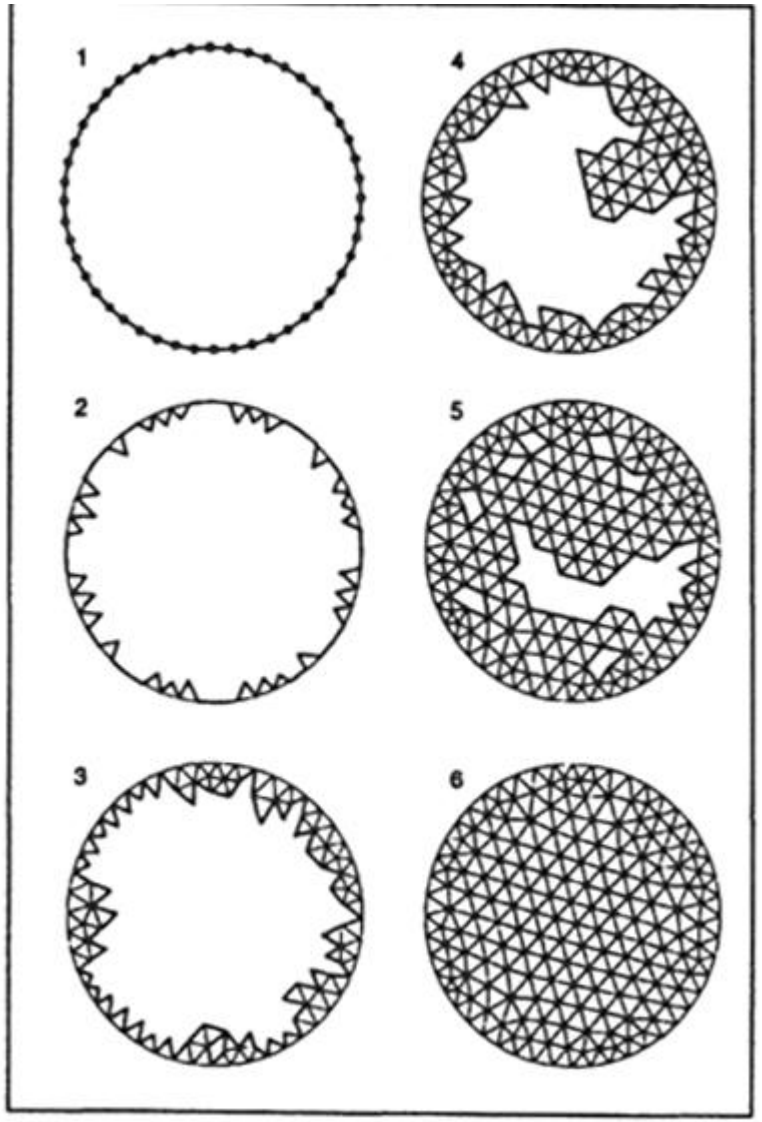
3.2.Co-edge direction

3.3.Node tolerance

3.4.Spanning angle

3.5.Function

Correctness > Function > Quality



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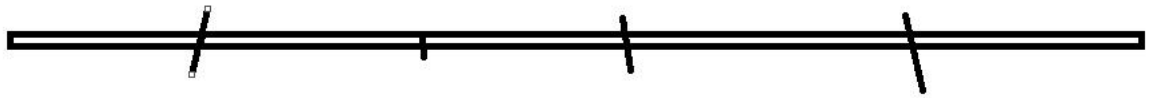
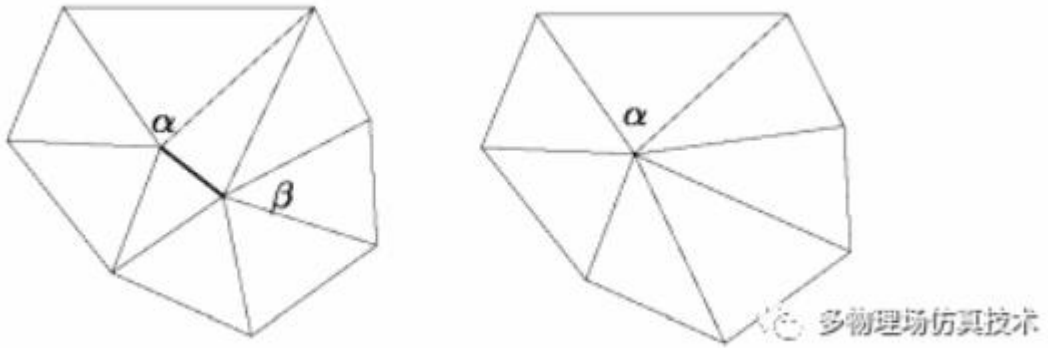
Constrained Optimization problem



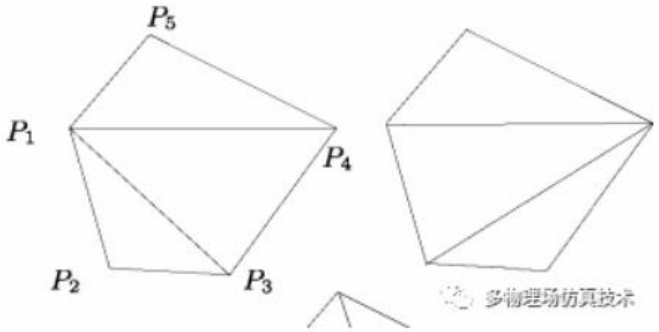
1. Validation check
2. Tree(Quad/OCtree/RTree)to acclerate

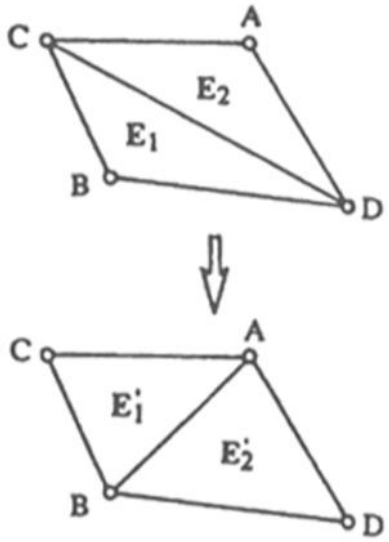
Mesh Improvement

1. Edge Collapse



2. Edge Swap

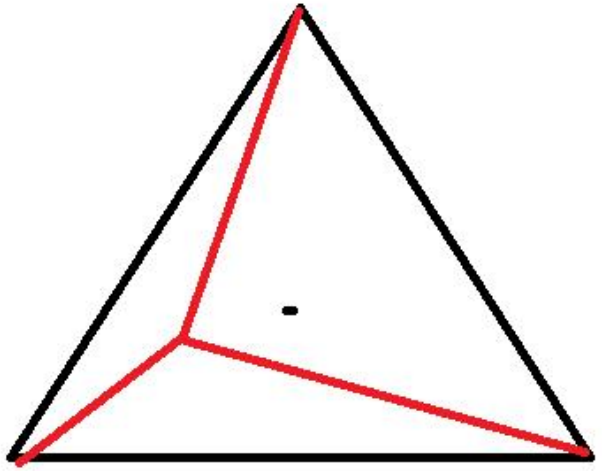




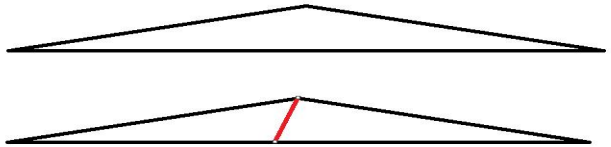
3.Smooth:

- Only move nodes
- Not change topology

- Move to centroid point that arounded



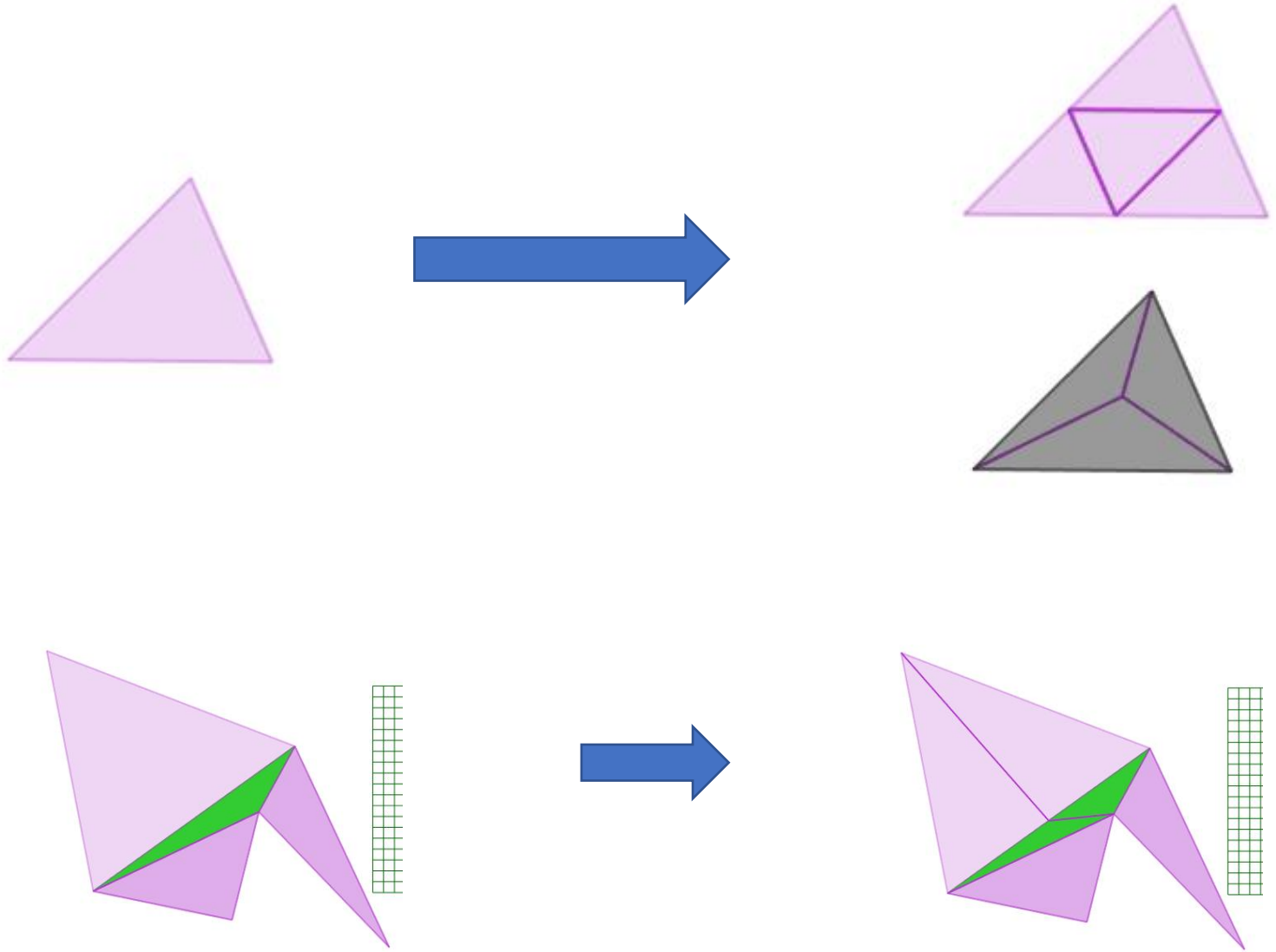
4. Split edge



Mesh Refinement

- Strategy level

- Algorithm level



Q&A