

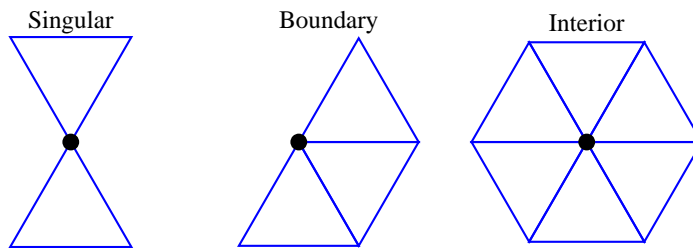
Observations on Meshes

Miles Macklin

May 14, 2012

1 Motivation

Manifold meshes are important for many purposes including physical simulation.



1.1 Triangle Meshes

How to classify a vertex based on the number of incident faces and edges.

Interior Vertex: $numEdges = numFaces$

Boundary Vertex: $numEdges = numFaces + 1$ or $numEdgesOpen = 2$

Otherwise vertex is singular.

1.2 Tetrahedral Meshes

There are analogous formulas for tetrahedral meshes.

Interior Vertex: $numFaces = 2 * numTets$

Boundary Vertex: $numFaces = 2 * numTets + 1$

Otherwise vertex is singular.

2 References

- [Gueziec et. al] - Converting Sets of Polygons to Manifold Surfaces by Cutting and Stitching
- (<http://mesh.brown.edu/taubin/pdfs/gueziec-etal-vis98.pdf>)