CS4621
M2 Discussion

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Topics

- Sharp Edges (aka. creases)
- Limit Positions
- Limit Normals
- Limit Updating
- OBJ Files
- Animation
- Misc.
Sharp Edges
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Use odd rule (mid-pt)
(SIGGRAPH Notes P. 70)
Sharp Edges
Sharp Edges

Just one sharp edge touching?
Use normal rules
Sharp Edges
Sharp Edges

More than 2?
Don’t move at all
Sharp Edges
Sharp Edges

All have 2 touching sharp edges, use even rule.

(SIGGRAPH Notes P. 70)
Limit Positions

- SIGGRAPH Notes, P. 72
- Same as even rule, but different Beta
- Sharp edges?

...
Limit Normals

- SIGGRAPH Notes P. 71 - “Tangent Vectors”
Limit Normals

- SIGGRAPH Notes P. 71 - “Tangent Vectors”
- Cross product and normalize
Limit Normals

• Sharp edges/boundaries?
• SIGGRAPH Notes, P. 72

\[ P_0, 1 \quad \ldots \quad P_0 \quad P_{k-1}, 1 \]

\[ t\text{-along} \]
Limit Normals

- Depends on valence (k)
- SIGGRAPH notes may be wrong for k=3
Limit Updating

- A control vertex affects at most 2-ring

- 2 methods:
  - Quad-tree
  - List of reference control points
OBJ Files

- Standard ASCII format - fairly simple
  - https://people.scs.fsu.edu/~burkardt/data/obj/obj.html
g Object001

v  -0.57735  -0.57735  0.57735
v  0.934172  0.356822  0
v  0.934172  -0.356822  0
v  -0.934172  0.356822  0
v  -0.934172  -0.356822  0

... 

f  19  3  2
f  12  19  2
f  15  12  2
f  8  14  2
f  18  8  2
f  18  8  2
f  3  18  2
f  20  5  4
f  9  20  4
f  16  9  4

...
Animation

- Per-object granularity
  - I.e. a keyframe may only affect 1 object
- Linear interpolation is good for M2
  - But, smoother interpolant for final
Misc.

• Movie output, low priority
  • Dump frames, at the least
• Camera animation not required for M2, but think about it
  • Manipulate using view-controls!