

CS462I

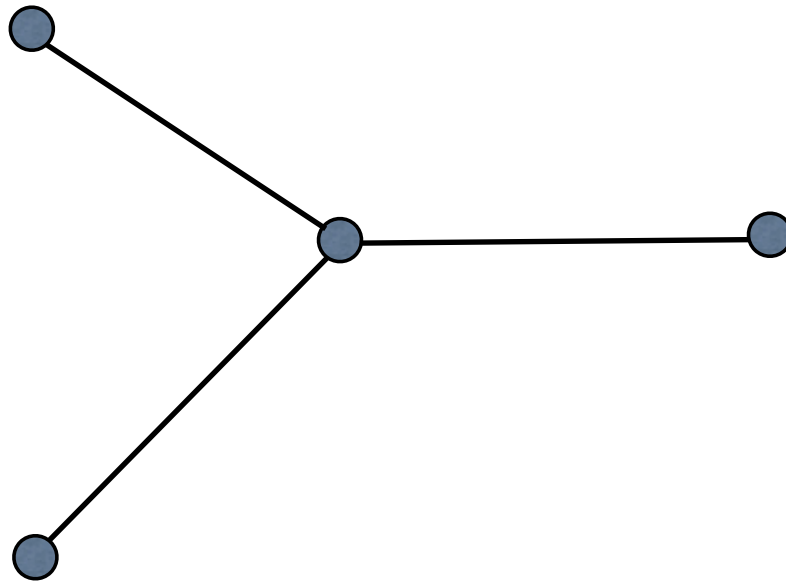
M2 Discussion

Steven An, 11/12/08

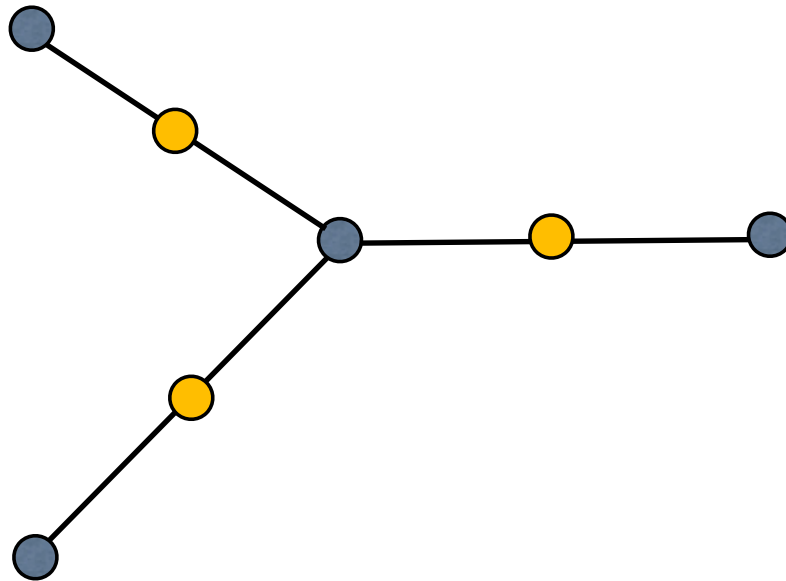
Topics

- Sharp Edges (aka. creases)
- Limit Positions
- Limit Normals
- Limit Updating
- OBJ Files
- Animation
- Misc.

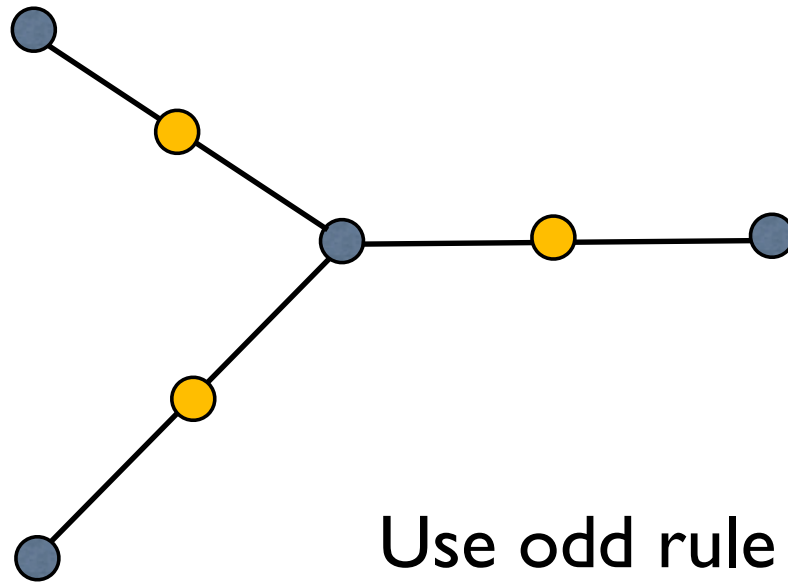
Sharp Edges



Sharp Edges

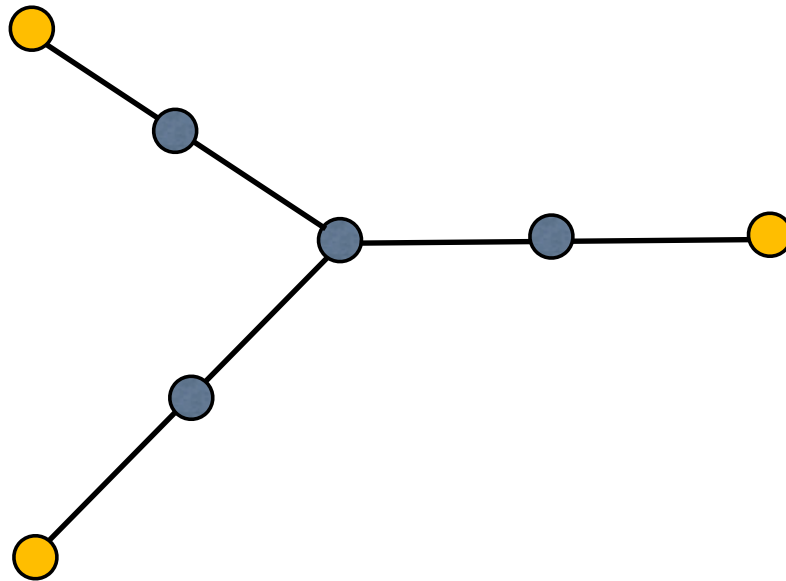


Sharp Edges

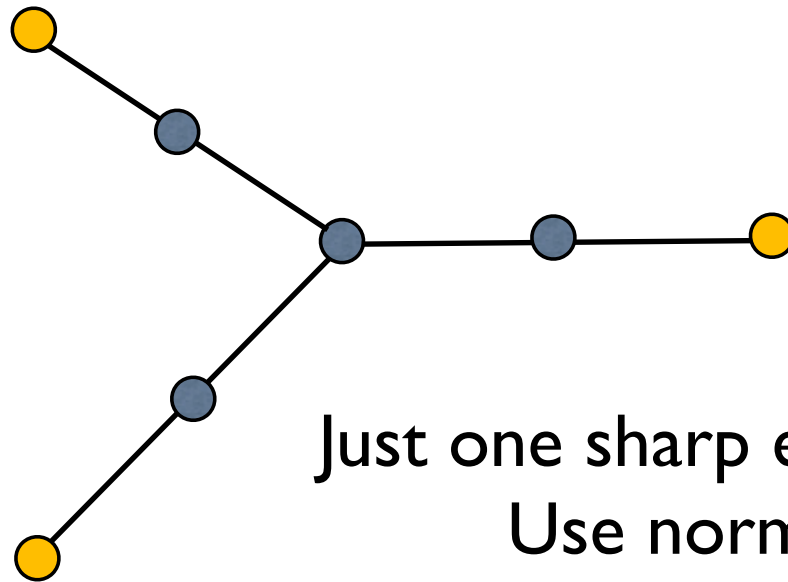


Use odd rule (mid-pt)
(SIGGRAPH Notes P. 70)

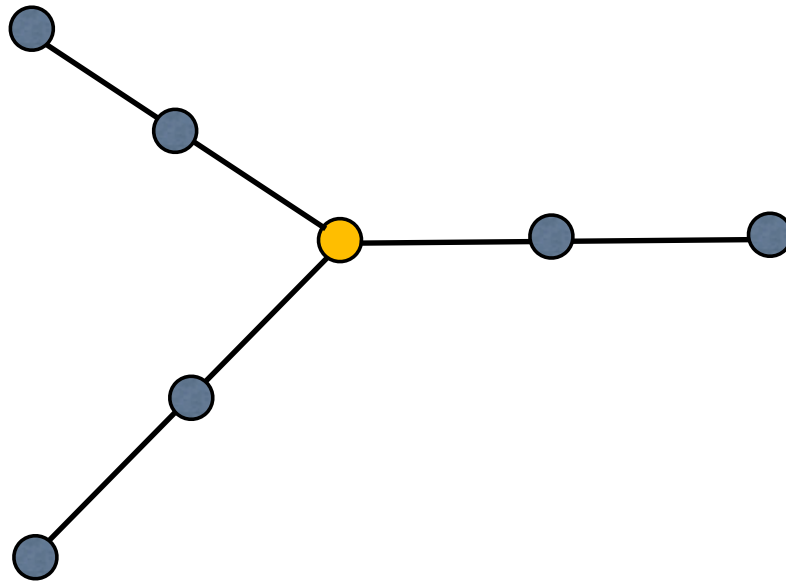
Sharp Edges



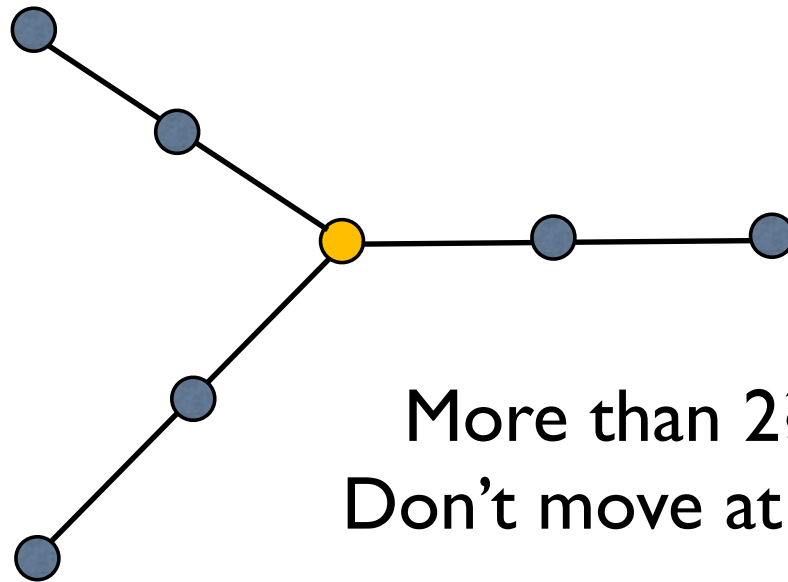
Sharp Edges



Sharp Edges

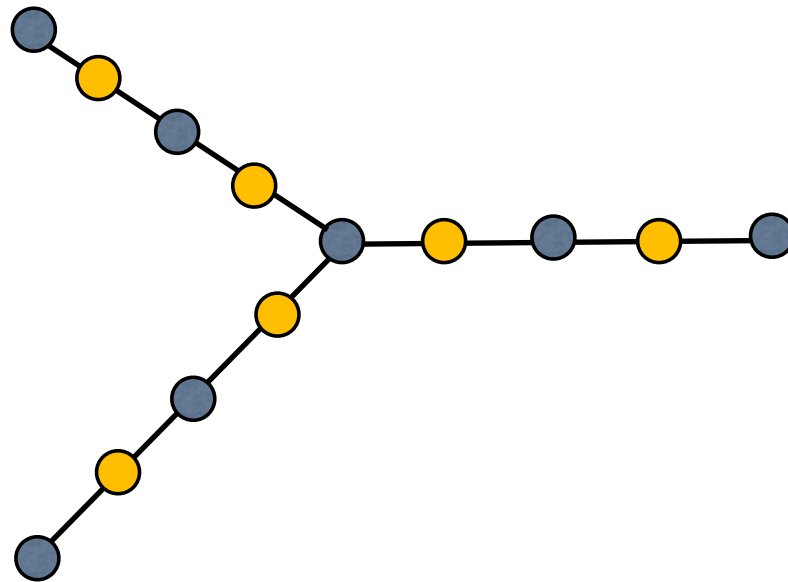


Sharp Edges

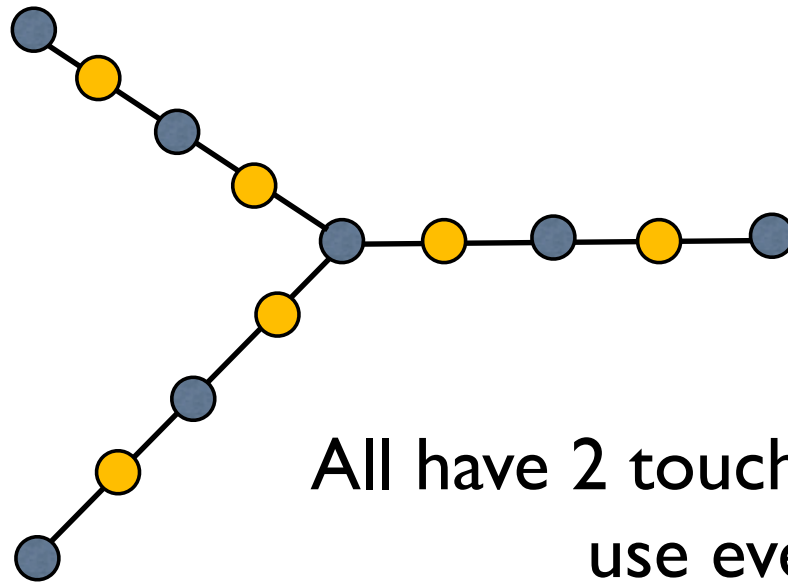


More than 2?
Don't move at all

Sharp Edges



Sharp Edges

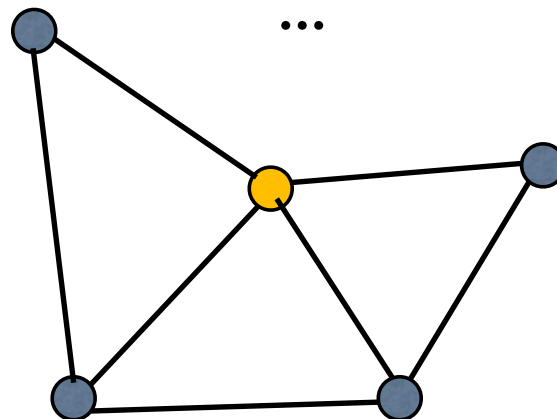


All have 2 touching sharp edges,
use even rule.

(SIGGRAPH Notes P. 70)

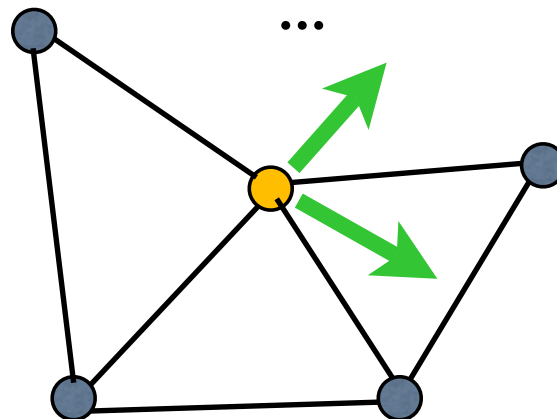
Limit Positions

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



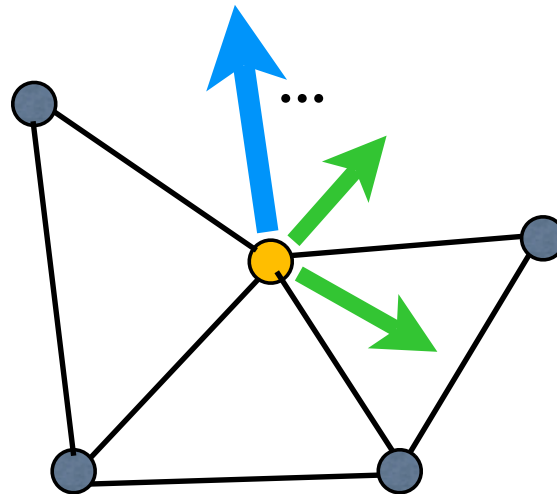
Limit Normals

- SIGGRAPH Notes P. 71 - “Tangent Vectors”



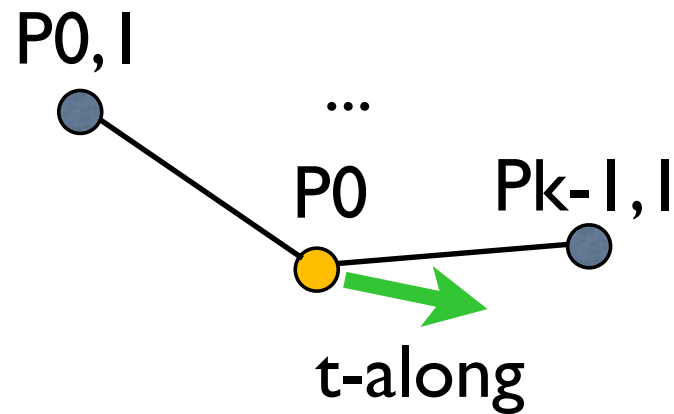
Limit Normals

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



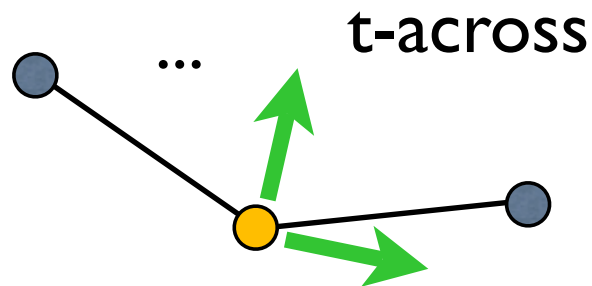
Limit Normals

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



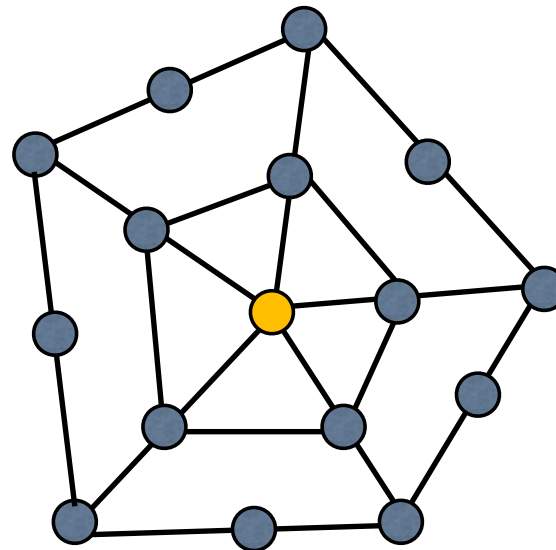
Limit Normals

- 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
- <http://en.wikipedia.org/wiki/Obj>
- <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 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!