Filtering Triangles

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- For every restricted Delaunay triangle, its dual Voronoi edge intersects the surface exactly once.

Filter I

For each given point sample a, define $r(a)$ to be the distance from a to its fifth nearest neighbor.

We delete a Delaunay triangle abc if the circumradius of abc is greater than $\max\{3r(a), 3r(b), 3r(c)\}$.

- Delete those with very long edge lengths first.
- Then, compute the circumradius to prune the rest.

Filter II

Delete a Delaunay triangle abc if the normal of abc makes an angle greater than $\pi/3$ with $\mathbf{n}_a$, $\mathbf{n}_b$, or $\mathbf{n}_c$.

Recall that the normal of abc is parallel to the dual Voronoi edge.

Filter III

Let V_{abc} be the dual Voronoi edge of a Delaunay triangle abc. Evaluate the sign of $f(x)$ at the endpoints of V_{abc}. If the signs are opposite, V_{abc} intersects the surface $f(x) = 0$. Otherwise, V_{abc} does not intersect the surface $f(x) = 0$.

Evaulate f using only point samples close to the endpoints of V_{abc}.

The Bunny Model and Formats