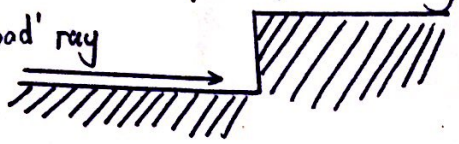
CS 348 Assignment 2

1. an example of bad ray



① if the ray is parallel to one side of the object, and it's close to the object, In such distance, it would take a long time for the ray to reach the hit point, because delta would be small.

2.

① Simple putting the individual distance estimators in a k-d tree would be more efficient if the object is evenly distributed all over the scene, so each time, kd tree would do meaningful spilt of the scene. It would take O(log N) Time complexity would be O(log N) N (number of object) if k-d tree is a blanced k-d tree.

② On the other hand, if the object are all crowded in a small area of the scene, then simply putting distance estimator would be more efficient.

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3. if pError is set to zero, then the take 'spherede' shape as an example, the image would become some discrete points as shown in the left image.

This is because many points might not satisfy the condition that no errors occur during the calculation. So many points just be filtered out.

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4. Trouble in implementation

① 'linker problem'. when I created the subclass of distanceestimator, linker error occur, it says I didn't define the evaluation funtion which I actually did. I checked the function may times, it turns out I do not contain all the pure function, so the function was link was not define successfully established

② 'The angle' problem'. I haven't do the transformation of ray from window space to object space. When I rendered the mandelbulb, I do found out this problem because the scene created doesn't make sense at all.