

Computer Graphics Term Project

Mirror Room

한우진 조

2015170830 손승우

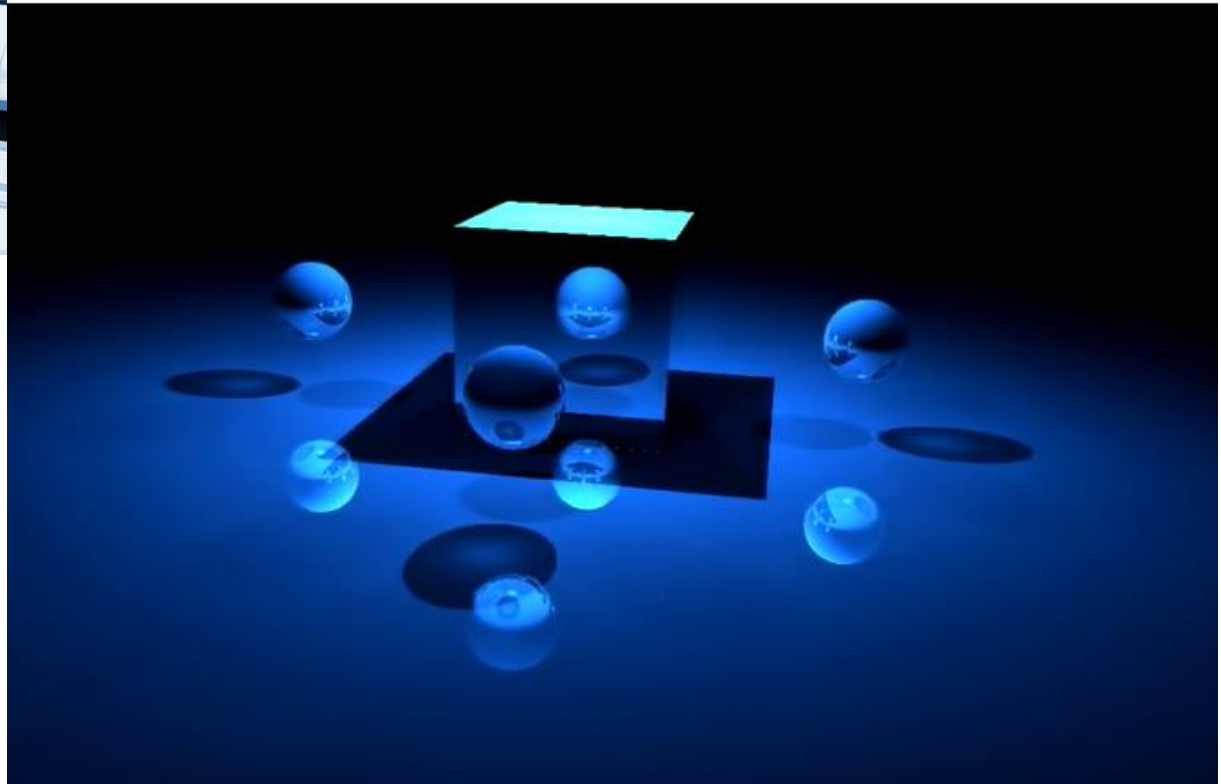
2015410067 정여진

2015170313 한 빈

Contents

- Scene
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Scene - Goal



Final Scene



Process



Sphere
Ray Tracing



Polygon
Ray Tracing



일반 Mesh Data
변환하여 Ray tracing



Octree로
최적화

Triangle
Ray
Tracing



Reflection을 통한
거울 구현



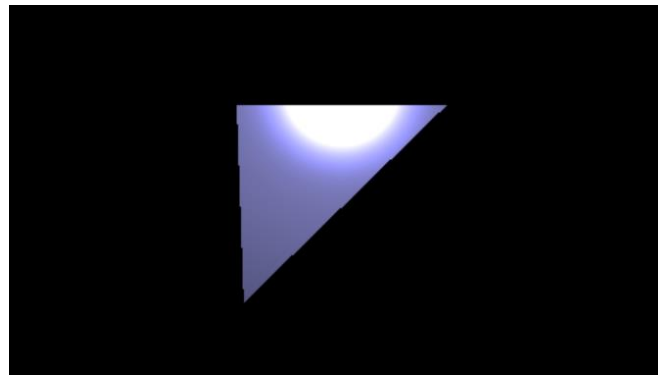
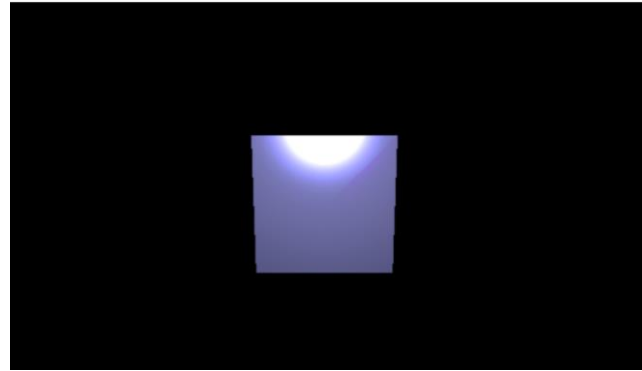
거울의 방
Scene 구현



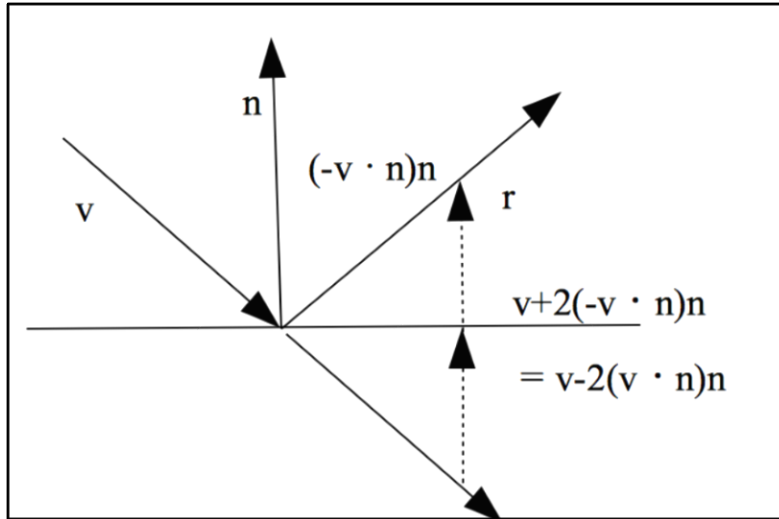
성능분석



Simple Ray Tracing

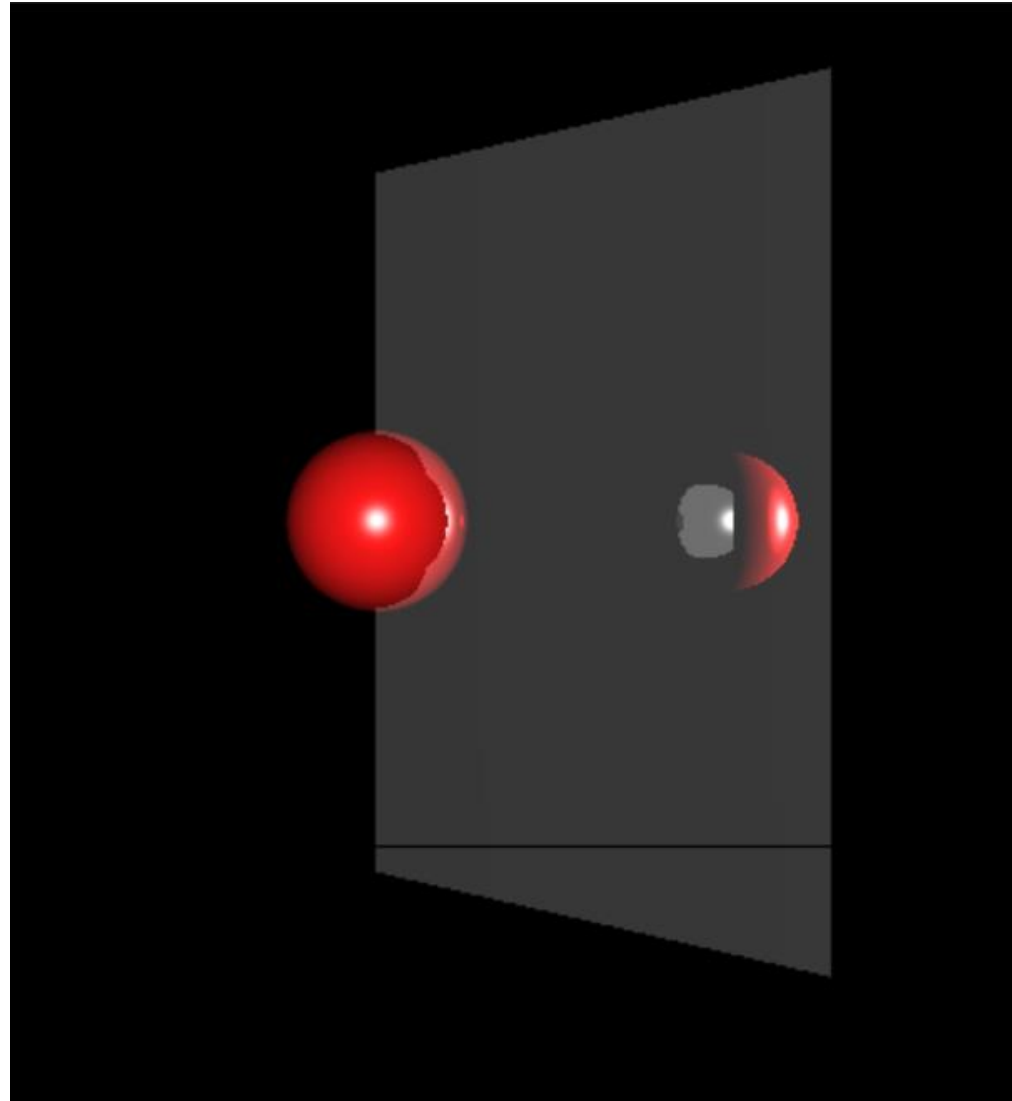


Reflection & Simple Mirror

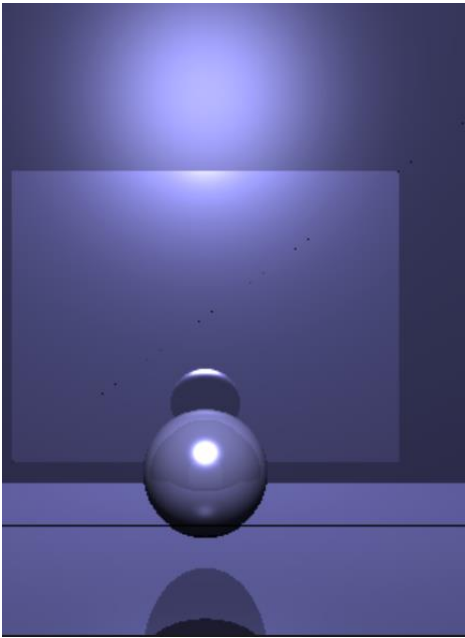


```
VECTOR3D N = o->get_normal(point);  
N.Normalize();  
VECTOR3D Reflection = 2 * (N.InnerProduct(-1 * ray.dir))*N + ray.dir;  
Reflection.Normalize();
```

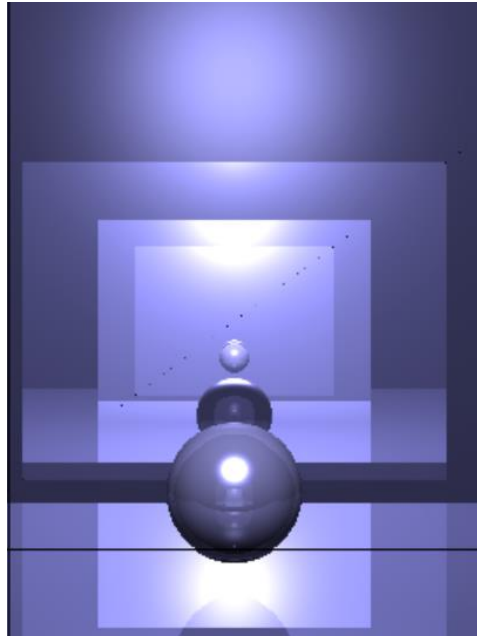
```
return o->k_ambient + shadow * (o->getColor(point, light, ray.origin))  
    + 1.0*raytrace(Ray(point, Reflection), depth - 1);
```



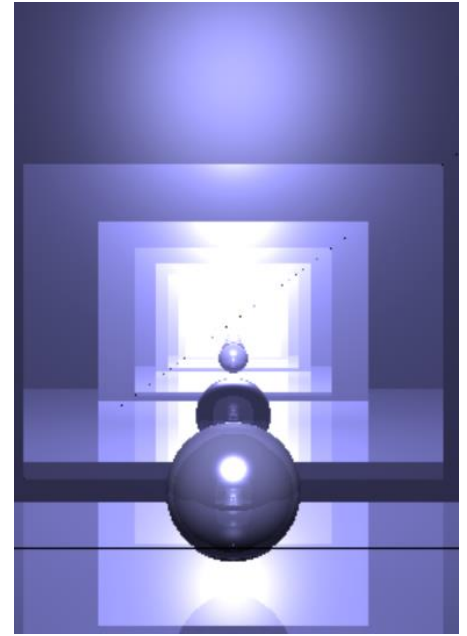
Reflection & Simple Mirror



Depth 1

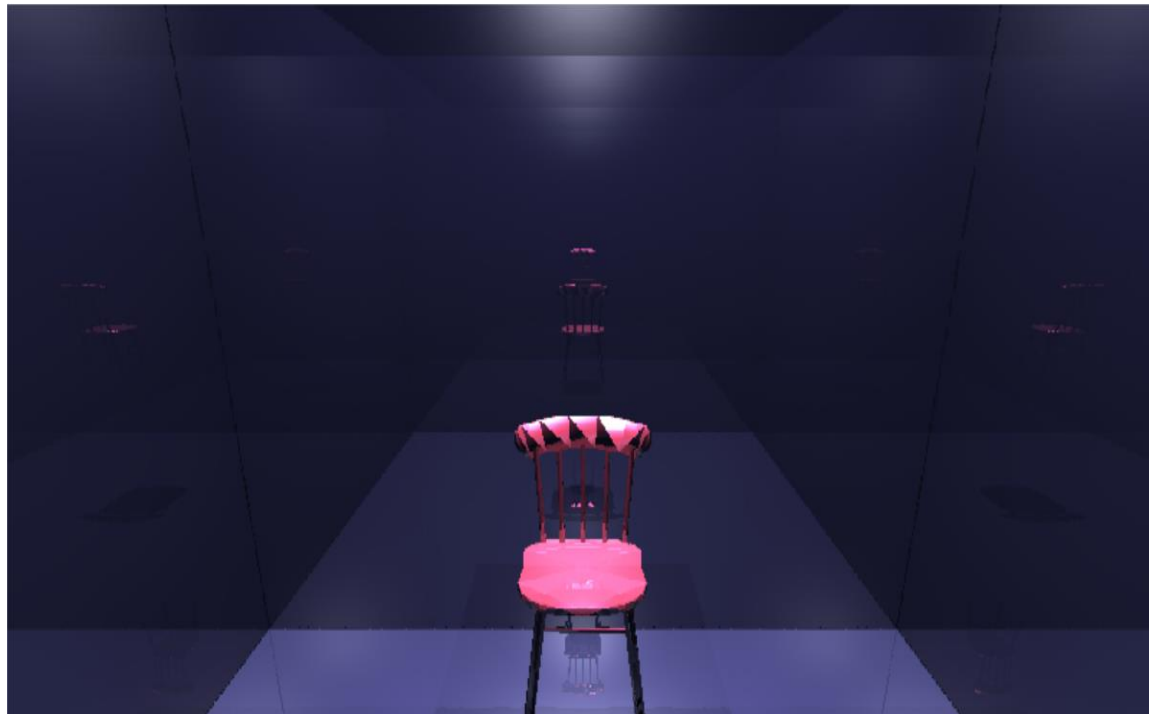
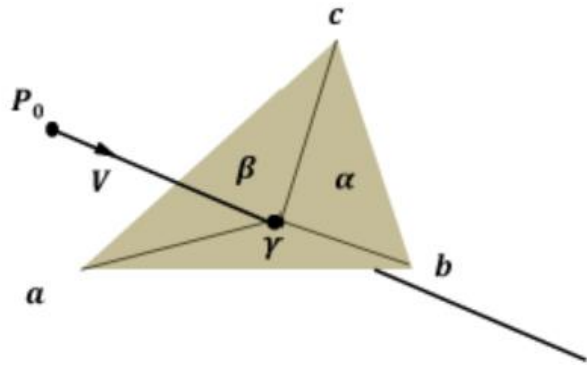


Depth 3

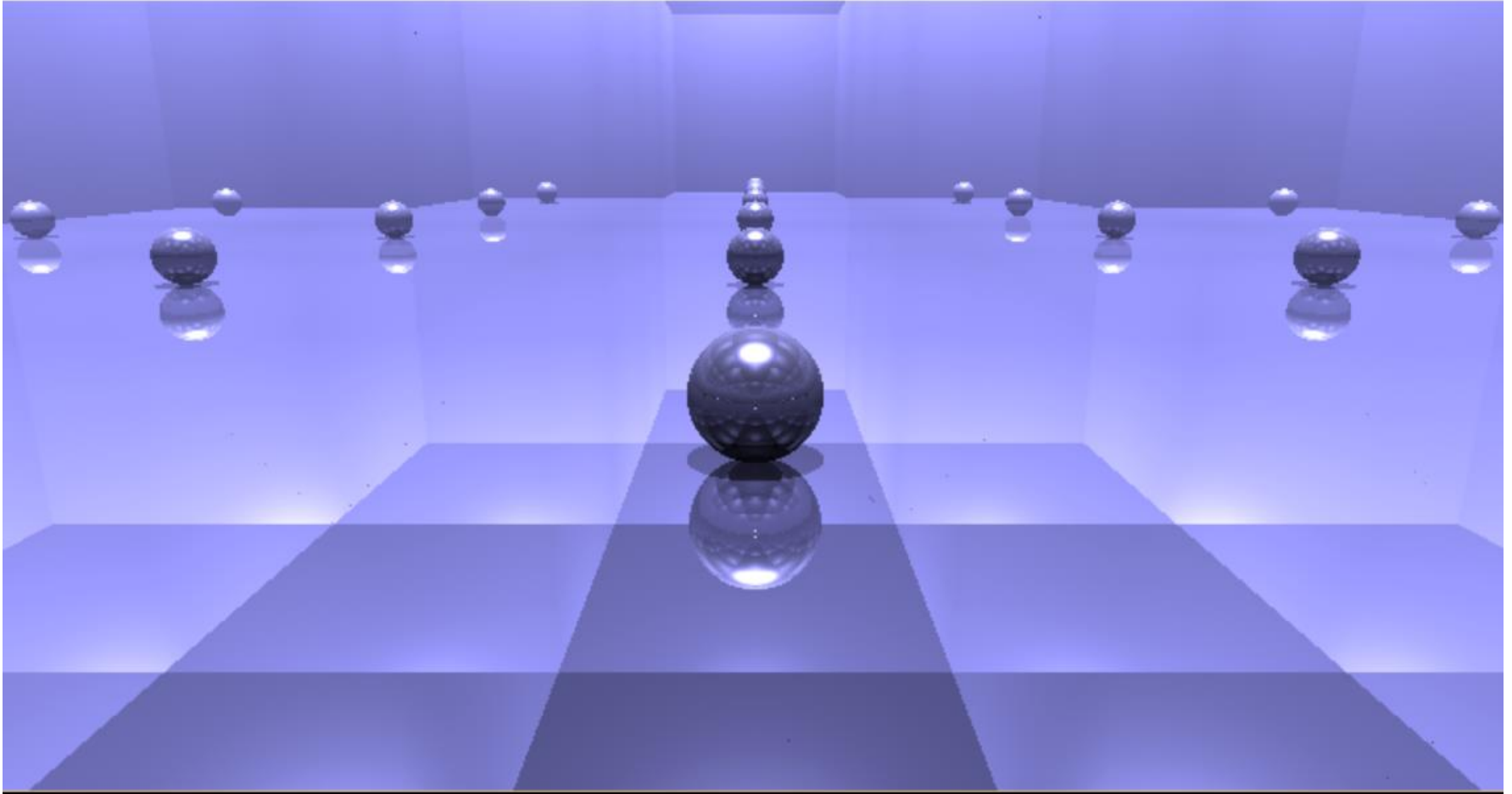


Depth 10

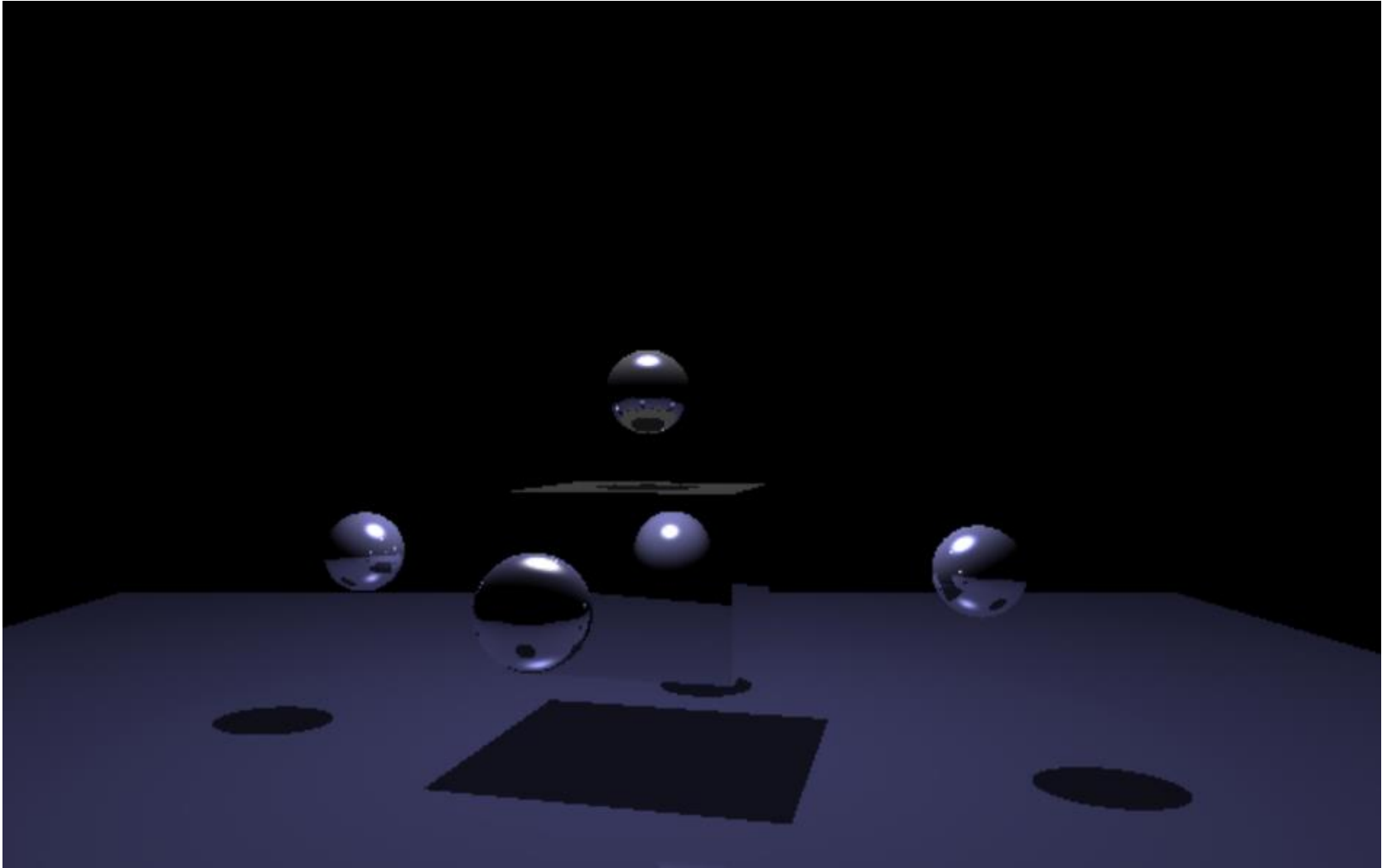
Mesh Data & Ray tracing



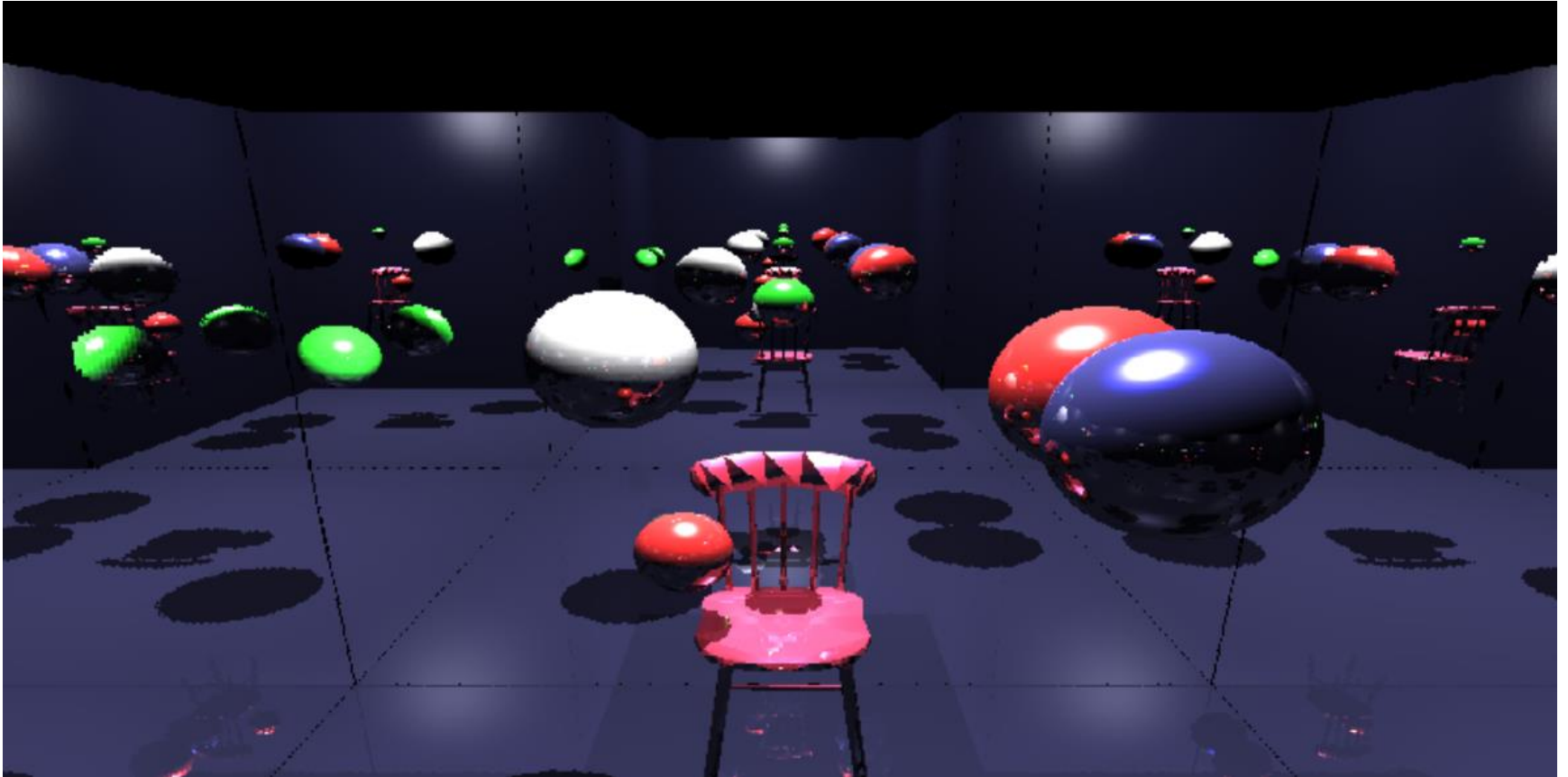
Mirror Room



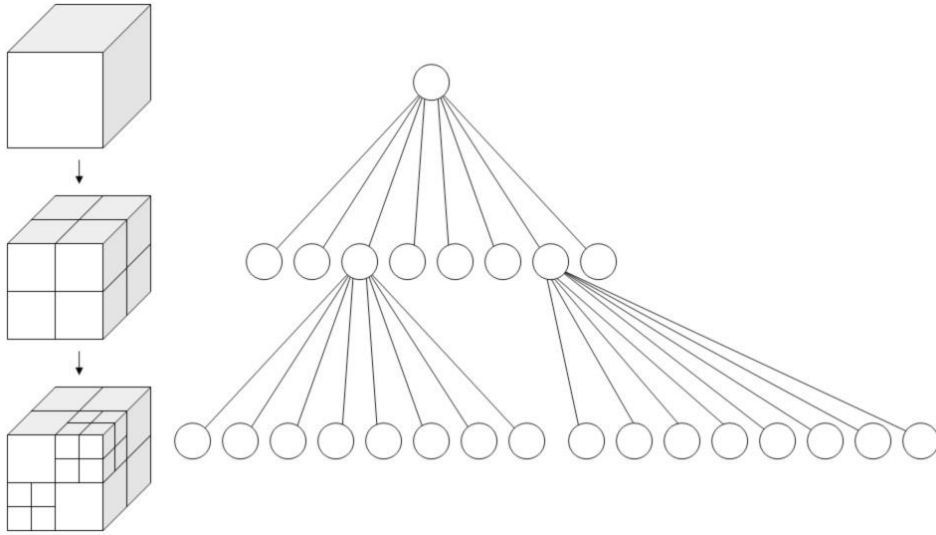
Mirror Room



Mirror Room



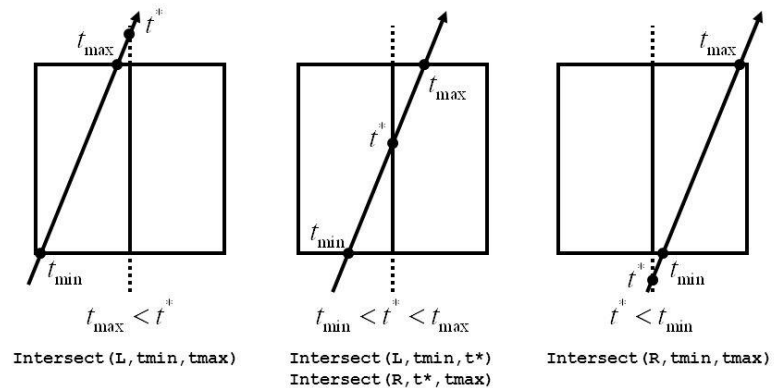
Data Structure-Octree



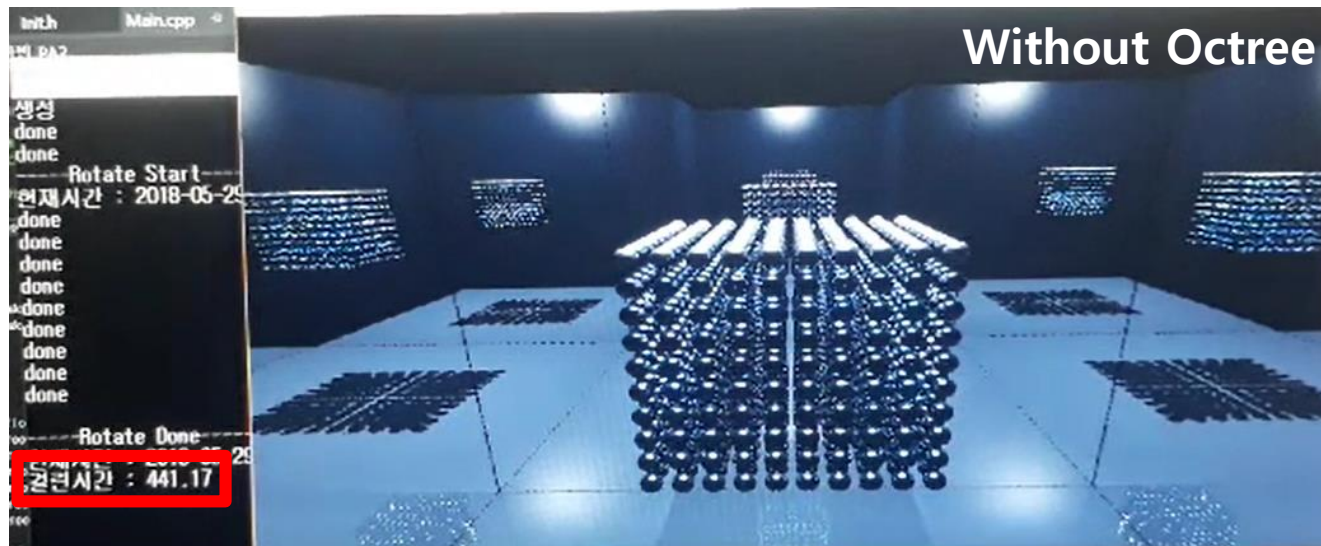
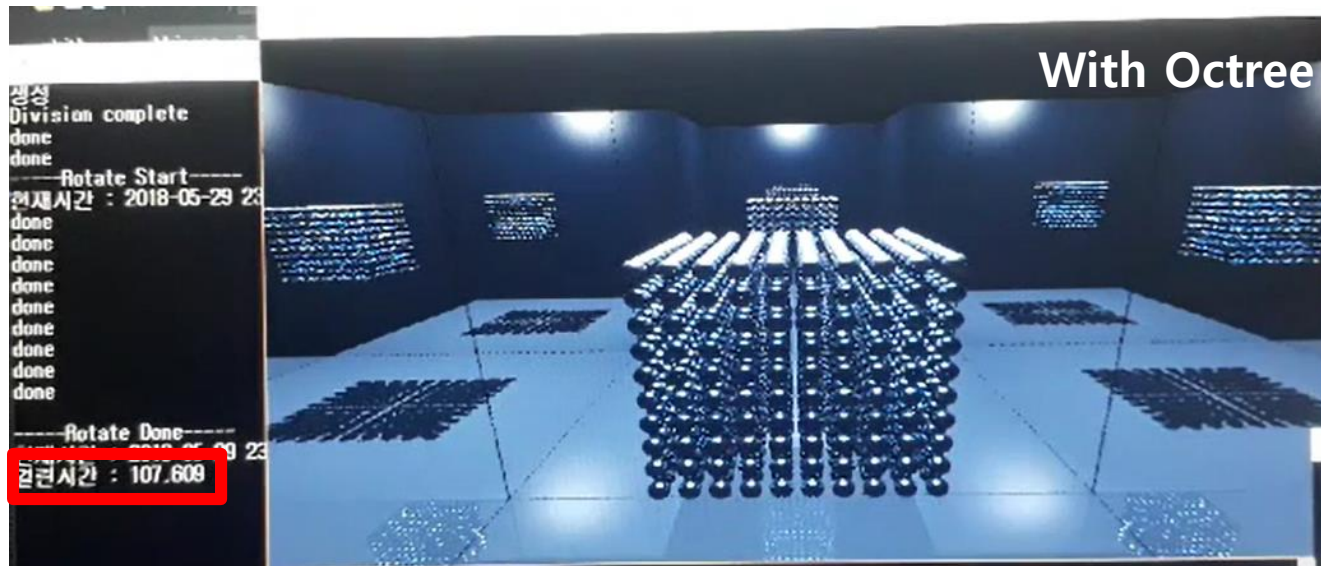
Ray Traversal Algorithms

Recursive inorder traversal

Kaplan, Arvo, Jansen



Performance Analysis



References

An Efficient Parametric Algorithm for Octree Traversal

J. Revelles[†], C. Ureña[†], M. Lastra[‡]

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https://github.com/diwi/Space_Partitioning-Octree_BVH/blob/master/SpacePartitioning/src/DwOctree/OctreeTraversal.java



[diwi/Space_Partitioning-Octree_...](#)
[Space_Partitioning-Octree_BVH...](#)
[github.com](#)

Thank you!!