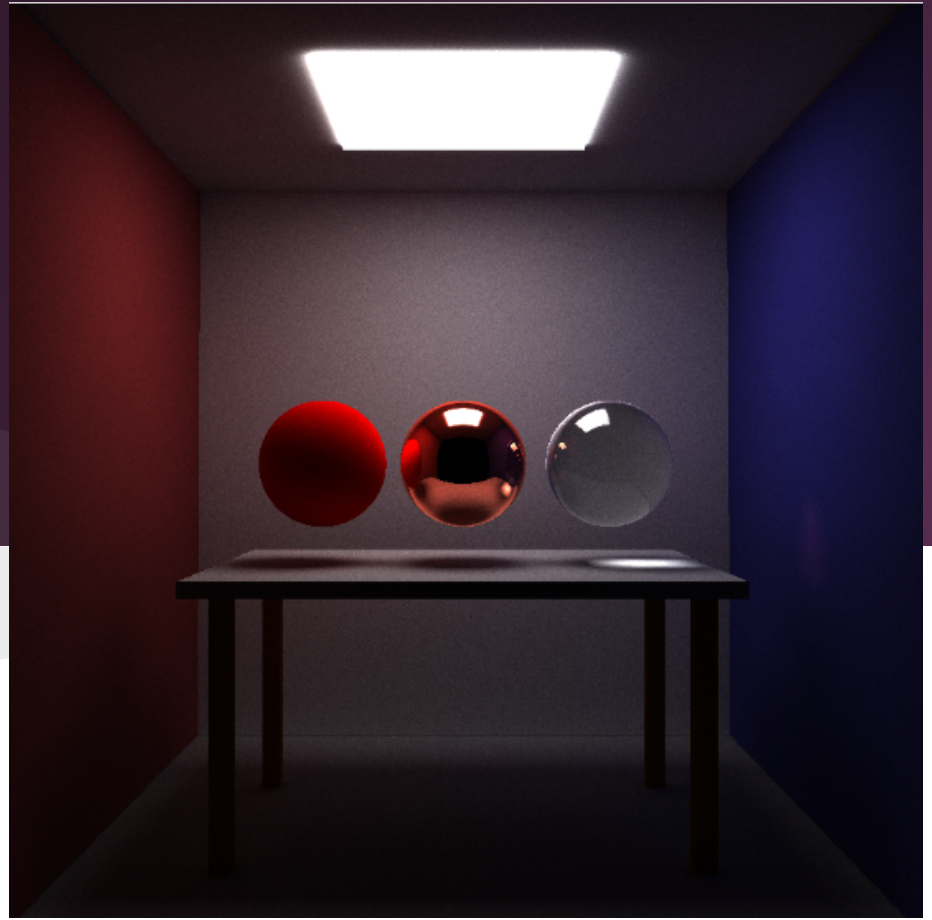
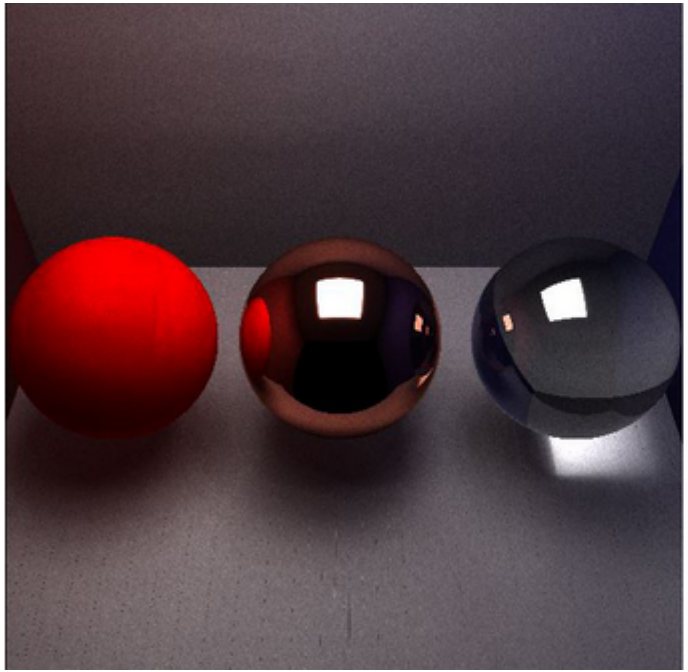


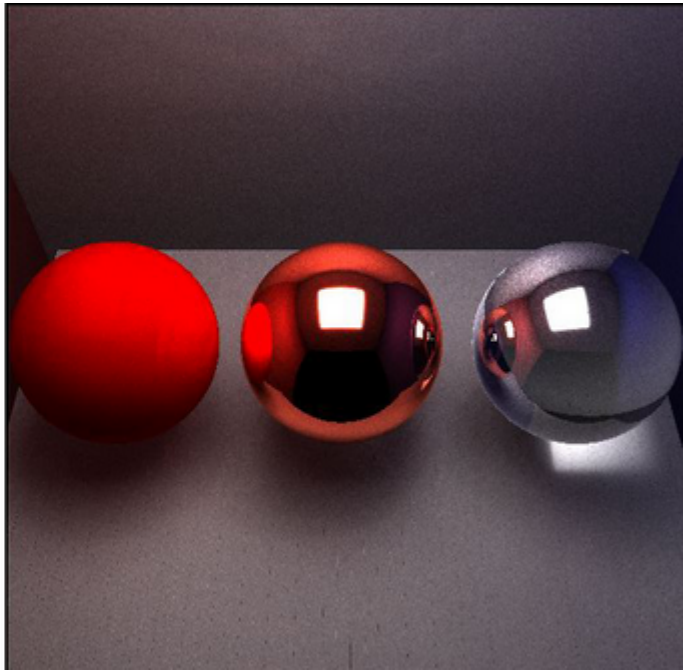
WebGL Path Tracer

Bo Zhang, Ying Li

Update

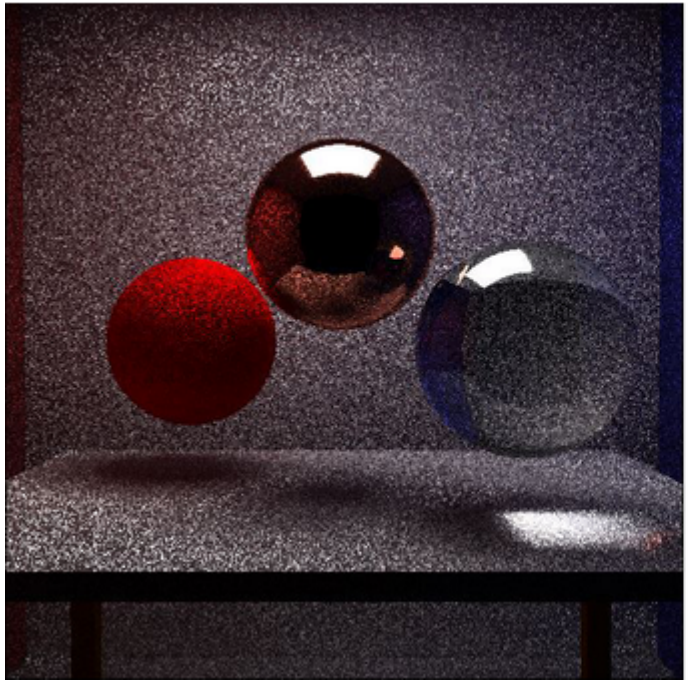
- Fix subsurface scattering problem

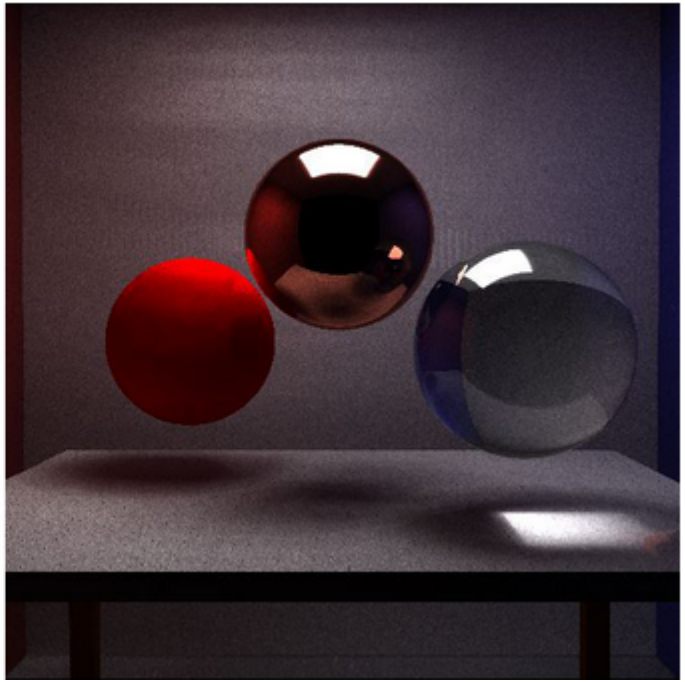




Update

- Add SSAA





Update

- Cut off back-facing wall
- Performance: reduce loading time

  eliminate if statement; use less math functions(sin,cos);

  avoid to nest functions(self-written) in one sentence

	Beta	Final
Loading Time	2-3 min	< 5s
FPS (Avg.)	14	25

Features

- Basic path tracer
- Diffuse surfaces
- Diffuse reflection
- Fresnel Based Reflection & Refraction
- Camera interactivity
- Subsurface scattering (Fake)
- Super-Sample Anti aliasing
- Realtime Add new primitives

Demo

website:

https://github.com/wulinjiansheng/WebGL_PathTracer

video:

https://www.youtube.com/watch?v=Hm6VyPIbKP0&feature=youtu.be

GitHub:

https://github.com/wulinjiansheng/WebGL_PathTracer

WebGL vs. CUDA PT

- Ping Pong Texture

- Parameters Texture
  - No size limitation
  - Not accurate

Pixel	Object's Parameter
0	`Color`
1	`Objtype,Texturetype`
2	`Refelective,Refractive`
3	`IOR,Subsurface Scattering,Emittance`
4	`Translation`
5	`Rotation`
6	`Scale`

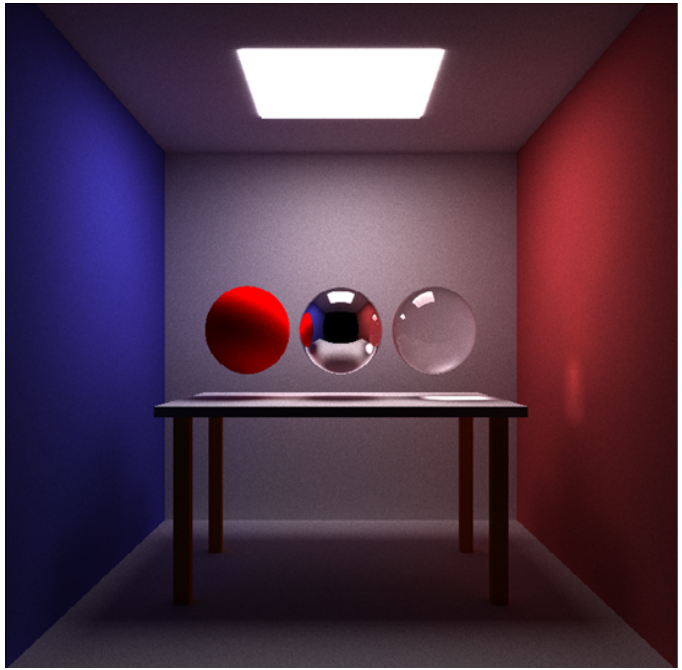
Performance

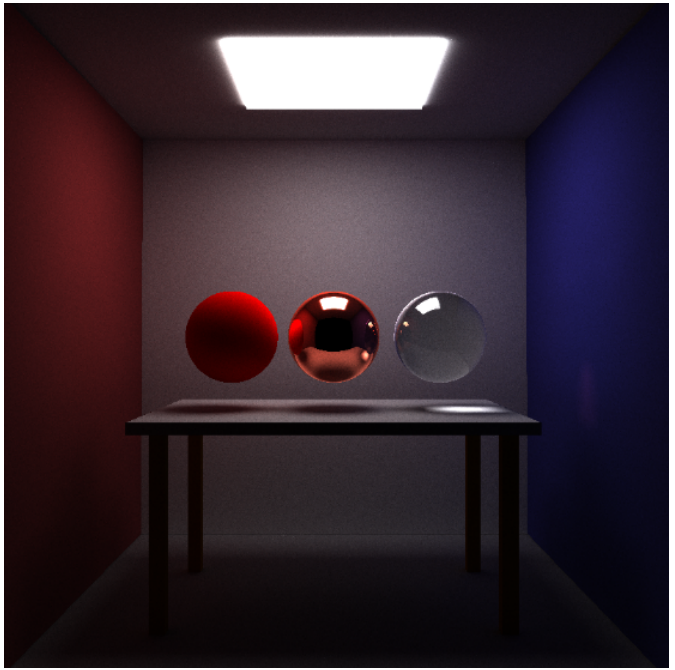
- Initialization Timing

  http://wulinjiansheng.github.io/WebGL_PathTracer/

Performance

- CUDA (6.47 FPS) vs. WebGL (12 FPS); 5000 iterations, 800*800





Performance

- Number of primitives

Number of Objects	Average FPS
Default(14)	12
20	9
Max(30)	6

Futures

- Robust
  - Cross Browser
  - Primitives, OBJ
- Features