

OCEAN SIMULATION

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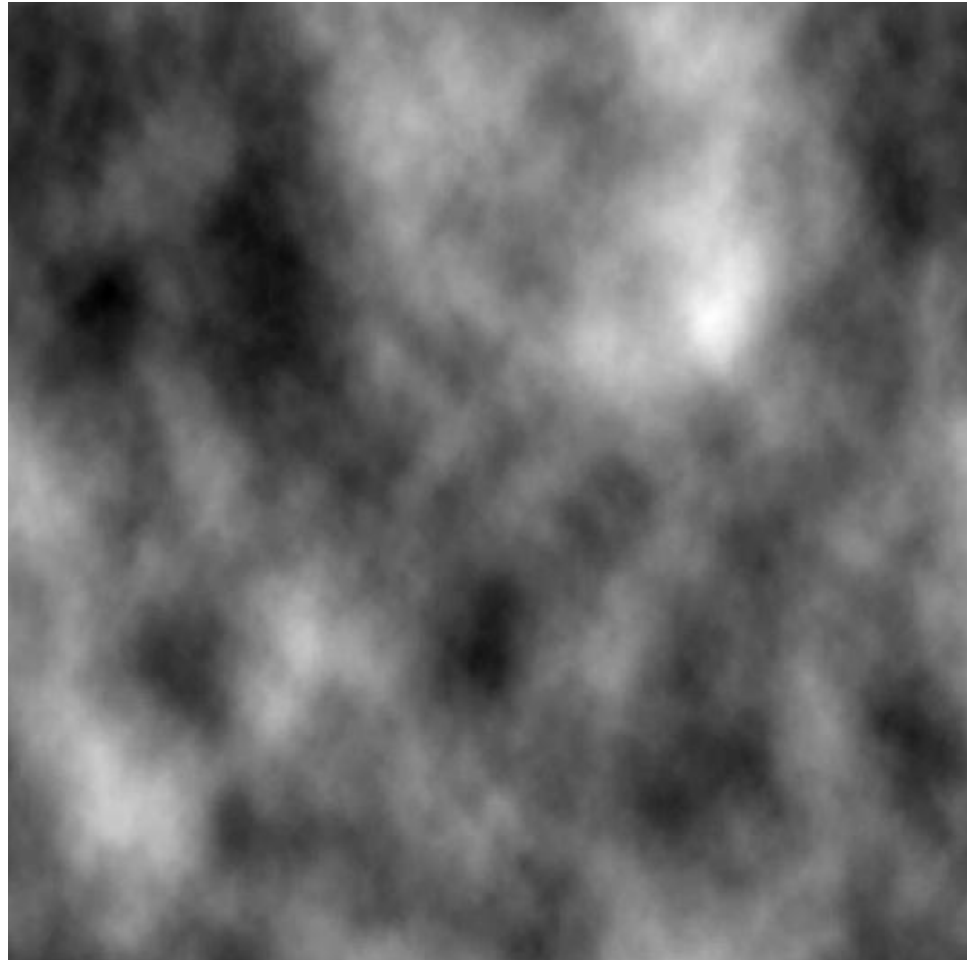
OUTLINE

- Wave Simulation
- Particle System
- Cube map
- Work flow
- Reference



WAVE SIMULATION

- Height map
 - Gerstner Wave
 - Perlin Noise
 - FFT



IMPLEMENT METHOD

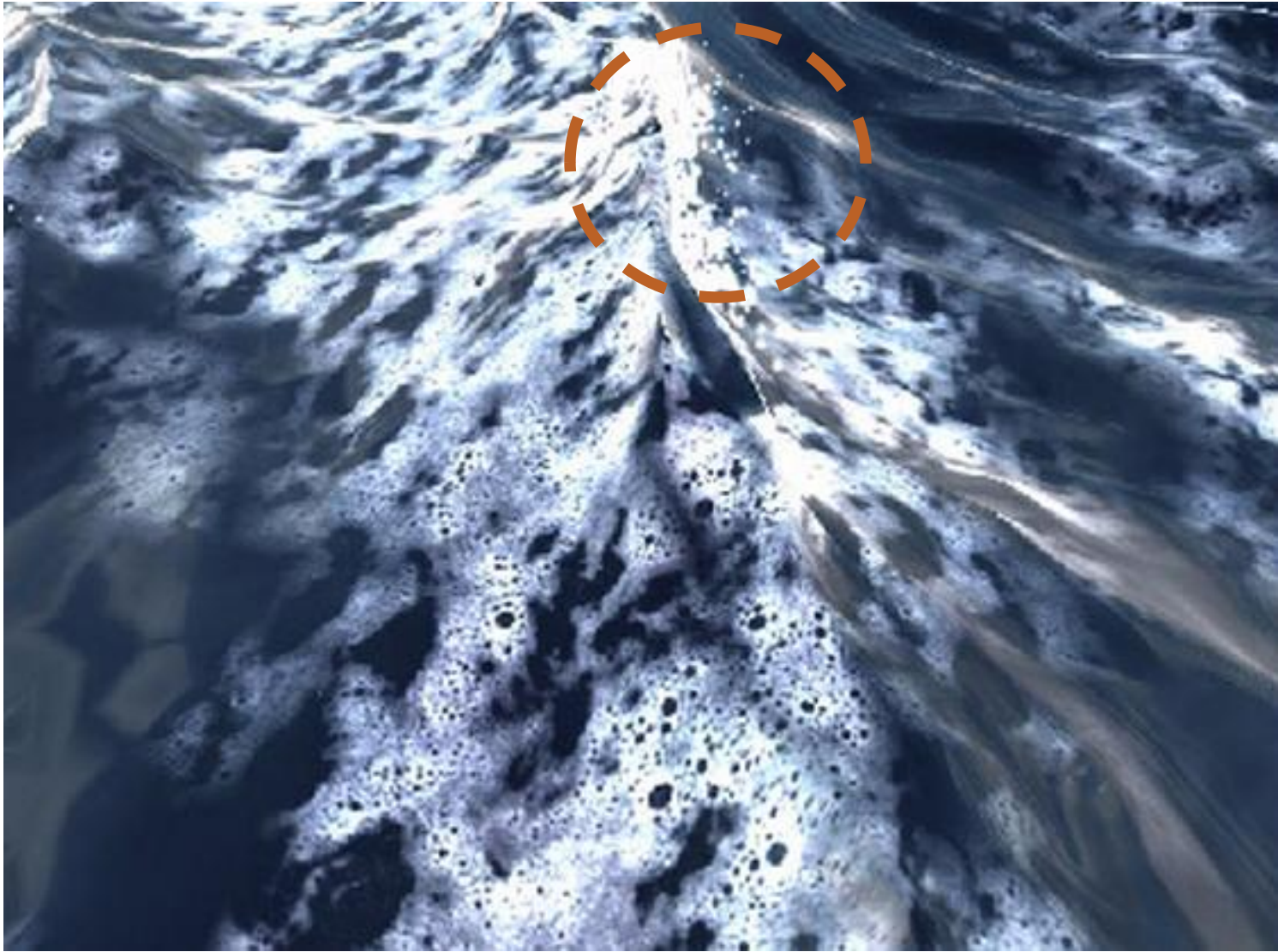
	Perlin noise	FFT
Implement	Easy	Hard
Realistic	Medium	Good
Speed	Faster	Medium



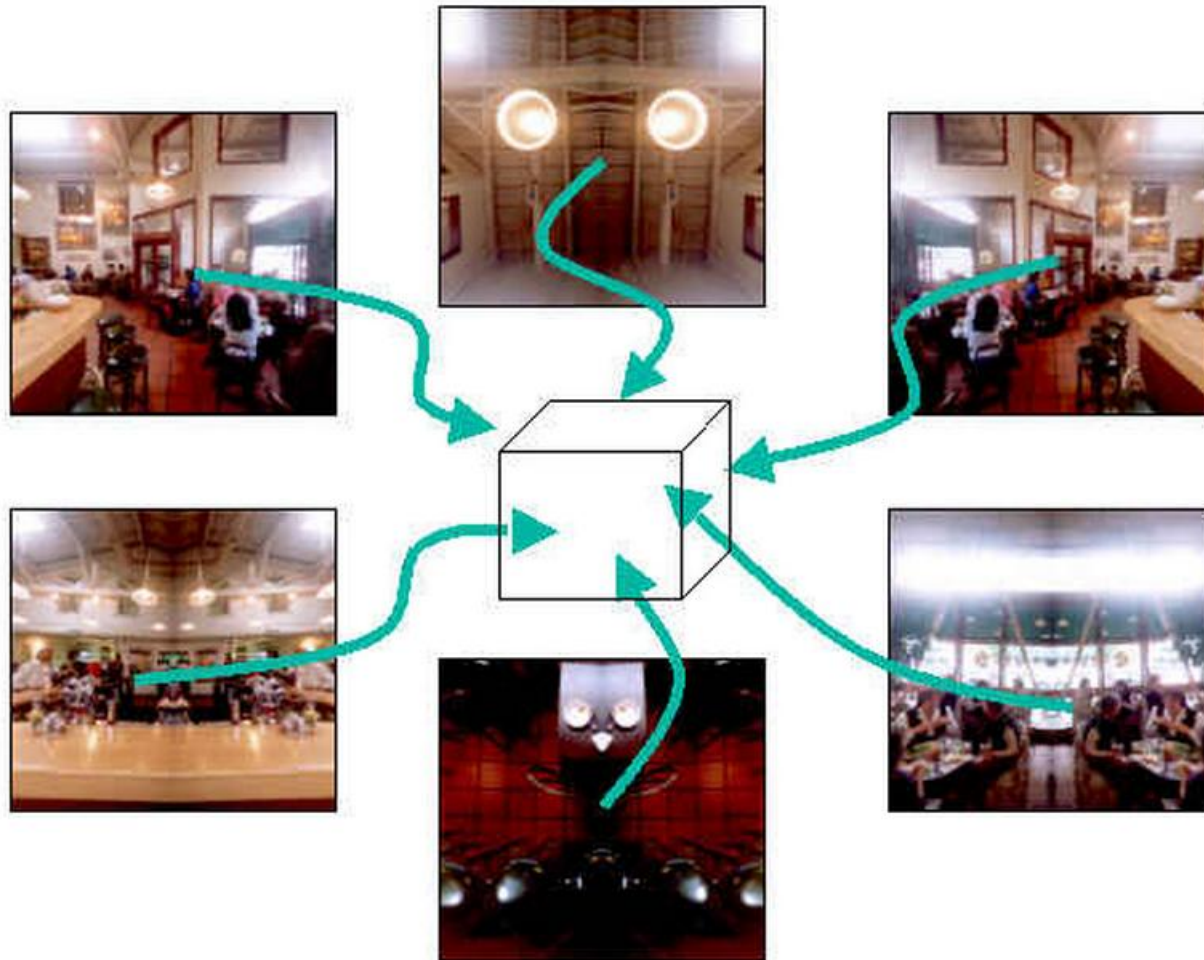
PARTICLE SYSTEM

- Navier-Stokes Equation
- Smoothed Particle Hydrodynamics
- GPU-based Particle System
- Others...

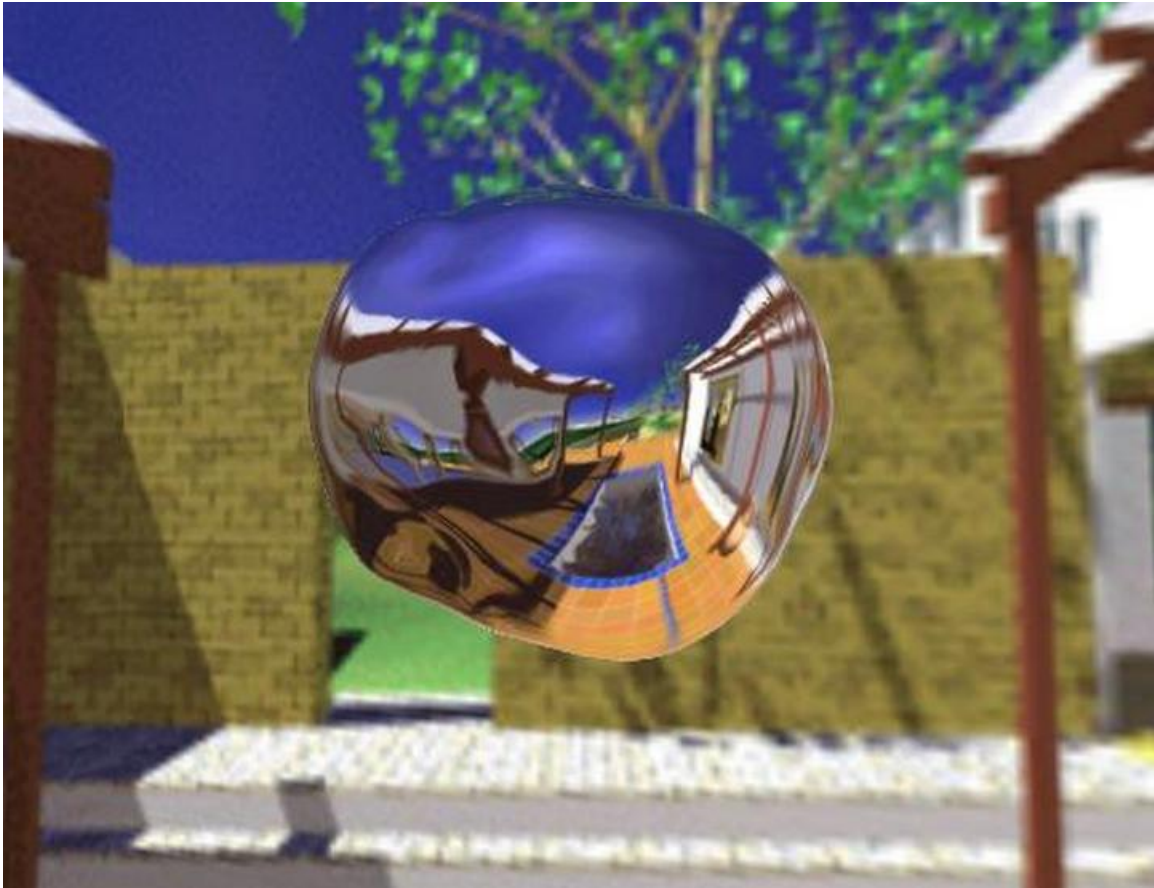




CUBE MAP



CUBE MAP



WORK FLOW

- 產生海浪
 - 生成初始 h_0
 - 改變海面高度
 - 水平移動海浪
- 計算水花粒子
 - 產生水花粒子
 - 尋找破浪頭
 - 給予起始位置及初速
 - 粒子死亡
- Rendering with Cube Map



REFERENCE

- JohansonClaes. Real-time water rendering.
- LimasaterFredrik, & LarssonMarten. Ocean water animation and rendering.
- Perlin Noise. (01/18/10). Fetch from http://freespace.virgin.net/hugo.elias/models/m_perlin.htm
- TessendorfJerry. Simulation Ocean Water.
- Lutz Latta, Build a Million Particle System.

