Research Journal

COMP220

1507866

November 27, 2016

1 Papers:

1.1 Design and Application of General Data Structure for Particle System [1]

- The main properties of particle are:

  - spatial location

  - velocity

  - survival time

  - shape

  - size

  - gravity factor

- Properties change over time

- Particle system should:

  - initialise particles

- emit particles

- render particles

- eliminate particles

Paper mostly just gave a model for a particle system, could be helpful for breaking down the particle system into smaller user stories.

1.2 Illumination for computer generated pictures [2]

- Textures and shadows make 3D graphics look more realistic

- Three light parts of light:

    - Ambient

    - Specular

    - Diffuse

- previous methods took a long time

Related papers:

- Blinn [3] - says Phong model not good for reflections

1.3 Particle Systems — a Technique for Modeling a Class of Fuzzy Objects [4]

- Other papers refer to this as original paper on Particle Systems

- Particle effects for dynamic/ fluid objects

- Particles can "live" and "die"

- Primitive/simpler shapes/models work better

Related papers:

- Pegoraro [5]

1.4 Study on algorithm for fireworks simulation based on particle system [6]

- Chose paper as a particle effect for fireworks may relate to a fire particle effect

- Particle systems used to simulate irregular objects

- Uses lots of maths

- Takes wind/other forces on the particle into account

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1.5 The status quo and realization of Waterfall simulation based on particle system [7]

- Focuses on water simulation instead of fire

- Using physics to make particles more realistic

- Use collision detection to make more fluid / respond to environment

1.6 Physically-Based Realistic Fire Rendering [5]

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Related papers:

- Will add papers from this papers previous research section

References

[1] X. Huang, D. Zhao, N. Li, and R. Xu, "Design and application of general data structure for particle system," in *Computer Science and Electronics Engineering (ICCSEE), 2012 International Conference on*, vol. 1, pp. 489–492, March 2012.

[2] B. T. Phong, "Illumination for computer generated pictures," *Commun. ACM*, vol. 18, pp. 311–317, June 1975.

[3] J. F. Blinn, "Models of light reflection for computer synthesized pictures," *SIGGRAPH Comput. Graph.*, vol. 11, pp. 192–198, July 1977.

[4] W. T. Reeves, "Particle systems: A technique for modeling a class of fuzzy objects," *ACM Trans. Graph.*, vol. 2, pp. 91–108, Apr. 1983.

[5] V. Pegoraro and S. G. Parker, "Physically-based realistic fire rendering," in *Proceedings of the Second Eurographics Conference on Natural Phenomena*, NPH'06, pp. 51–59, 2006.

[6] S. Lei and W. Wang, "Study on algorithm for fireworks simulation based on particle system," in *Computer Science and Network Technology (ICCSNT), 2013 3rd International Conference on*, pp. 231–234, Oct 2013.

[7] L. Shi and W. Wang, "The status quo and realization of waterfall simulation based on particle system," in *2015 4th International Conference on Computer Science and Network Technology (ICCSNT)*, vol. 01, pp. 91–93, Dec 2015.