CG resources collection

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2023 年 11 月 13 日

目录

<div align="center">摘要</div>

This is a collection of resources about Simulations of Computer Graphics which include SIGGRAPH courses, open courses, books, websites, and papers. And in each folder of this project lies my notes. Note that because this collection is my personal collection, there are some things related to my research interests but not CG.

0   In Progress

1. save money for overleaf student plan.

1 SIGGRAPH courses

A curated list of SIGGRAPH courses to learn. (sort by time)

1. 97' Physically Based Modeling: Principles and Practice

2. 08' Real time physics

3. 12' FEM Simulation of 3D Deformable Solids: A practitioner's guide to theory, discretization and model reduction

4. 16' The Material Point Method for Simulating Continuum Materials

5. 18' Parallel iterative solvers for real-time elastic deformations

6. 19' An Introduction to Physics-based Animation
   YouTube: here

7. 20'22' Dynamic Deformables: Implementation and Production Practicalities

8. 22' Contact and Friction Simulation for Computer Graphics

2 Open courses

A curated list of open courses to learn. (sort by topics)

1. CS6660 Physics-based Animation YouTube playlist

2. CS5643 Physically Based Animation for Computer Graphics

2.1 GAMES series

Collection of GAMES open courses which's about CG basics and simulation & animation.

1. GAMES-101 现代计算机图形学入门
   官网：https://sites.cs.ucsb.edu/ lingqi/teaching/games101.html
   B站：https://www.bilibili.com/video/av90798049
   related resources: 计算机图形学系列笔记

2. GAMES-103 基于物理的计算机动画入门
   官网：https://games-cn.org/games103/
   B站：https://www.bilibili.com/video/BV12Q4y1S73g/
   related resources: 一份笔记总结

3. GAMES-105 计算机角色动画基础
   官网：https://games-cn.org/games105/
   B站：https://www.bilibili.com/video/BV1GG4y1p7fF/

4. GAMES-201 高级物理引擎实战指南
   官网：https://games-cn.org/games201/
   B站：https://www.bilibili.com/video/BV1ZK411H7Hc/

5. GAMES-202 高质量实时渲染
   官网：https://games-cn.org/games202/
   B站：https://www.bilibili.com/video/BV1YK4y1T7yY/

6. GAMES-401 泛动引擎物理仿真编程与实践
   官网：https://games-cn.org/games401/
   B站：https://www.bilibili.com/video/BV15M4y1U76M/

2.2 Virtual human

- CVPR 21' tutorial: SMPL made Simple

3 Books

A curated list of books to read. (sort by topics)

3.1 CG basics

- Fundamentals of Computer Graphics (fifth edition), Steve Marschner, Peter Shirley et al. 2022

3.2 Rendering

- Physically Based Rendering: From Theory To Implementation (fourth edition), Matt Pharr, Wenzel Jakob, and Greg Humphreys, 2023

[freely available online](#)

- Real-Time Rendering (fourth edition), Tomas Akenine-M¨oller, Eric Haines, Naty Hoffman, Angelo Pesce, Michal Iwanicki, Sebastien Hillaire, 2018

- Ray Tracing Gems I, Alexander Keller et al. 2019
  [freely dowload](#)

- Ray Tracing Gems II, Per Christensen et al. 2021
  [freely download](#)

3.3 PBA

- Physics-Based Animation, Kenny Erleben et al. 2005

- Computer Animation: Algorithms and Techniques, Rick Parent, 2012

- Foundations of Physically Based Modeling and Animation, 2017

- Cloth Simulation for Computer Graphics, Tuur Stuyck, 2018

4 Websites

A curated list of noteworthy website. (no sort)

1. GAMES-CN 计算机图形学与混合现实研讨会
   https://games-cn.org/

2. Resources for Computer Graphics
   https://kesen.realtimerendering.com/

3. Physics-Based Animation
   https://www.physicsbasedanimation.com/

4. Code Replicability in Computer Graphics
   https://replicability.graphics/

5 Papers

A curated list of papers to read. (sort by topics and time)

6 Tools

A curated list of tools that may help in CG researches. (sort by topics)

6.1 Taichi

Taichi programming language, something can accelerate both programming and performance.

- Official site: Taichi Lang

- GitHub repo: taichi-dev/taichi

7 Math and Physics

Math and Physics learning resources, mainly books.

7.1 Math

1. (done) 普林斯顿微积分读本, 2016

2. (done) 线性代数及其应用, David C. Lay, 2010?

3. (in progress) Analysis (third edition), Terrence Tao, 2018?

4. (in progress) Linear Algebra Done Right (third edition), Sheldon Axler, 2016?

7.2 Physics

8 Misc

Something that not about CG or Simulation but hit my interests. (sort by topics)

8.1   GNN

Graph neural networks, applied in learning based simulation.

- Graph Representation Learning, William L. Hamilton, 2020

- GitHub awesome-self-supervised-gnn, Link

- CS224W: Machine Learning with Graphs
  Official site: https://snap.stanford.edu/class/cs224w-2020/
  Bilibili: https://www.bilibili.com/video/av677623822

- Some related Zhihu columns
  图神经网络
  深度学习与图网络
  图算法-时序建模-迁移学习

8.1.1   Papers to read

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8.2   HGNN

HyperGraph neural network, something interesting, and I wish to use it in my researches. It's a brand-new subject now (2023.11.13), so there are only papers?

- GitHub Awesome-HyperGraph-Network, Link

8.2.1   Papers to read

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