CSCI4120
Principle of Computer Game Software

SIU-HANG OR

COMPUTER SCIENCE & ENGINEERING DEPARTMENT

Course Info

- **Instructor:**
- S.H. Or SHB 127 shor@cse.cuhk.edu.hk

- **Tutor :**
- B.W. Zhu Kingsley SHB122 bwzhu@cse.cuhk.edu.hk

Assumption

- We assume you have fundamental concept in computer graphics, specifically rendering
- Basic understanding in rendering pipeline, from 3D geometry to pixels on screen

Syllabus

- Introduction to video game development
- Game design
- Engine programming
  I) Indoor visibility processing
  II) outdoor visibility processing
  III) character animation
  IV) collision detection & physics

- Game play programming
  I) AI
  II) scripting
  Game exploitation

Grading

- 3 *Assignments* (30%)
- Project /Game demo building (30%)

- *Final examination* (40%)
- Date : Apr 18 (M9-10)
- We will discuss the date for project demo later, probably in mid May

- No tutorial for first week!

Reference Books

- Mostly web materials

- Daniel S. Dalmau "Core Techniques and Algorithms in Game Programming", New Riders Publishing 2004.
- Alan Watt & Fabio Policarpo "*3D Games Real-time Rendering and Software Technology Vol. 1*", Addison-Wesley 2001.
- Game Design: Principles, Practice, and Techniques - The Ultimate Guide for the Aspiring Game Designer by *Jim Thompson, Barnaby Berbank-Green, Nic Cusworth,* Wiley, 2007.

Web Teaching

- **We use CUHK Blackboard platform for material dissemination as well as assignments collection**
  https://blackboard.cuhk.edu.hk

Guideline for Plagiarism

- If a student is found plagiarizing, his/her case will be reported to the Faculty Discipline Committee.
- If a student is found plagiarizing, his/her case will be reported to the Faculty Discipline Committee.
- If the case is proven after deliberation, normally the student will automatically fail the course in which he/she committed plagiarism with conditional demerit in place.
- The definition of plagiarism includes copying of the whole or parts of written assignments, programming exercises, reports, quiz papers, mid-term examinations and final examinations.

Development Platform

- You need to form a group 3-4 members
- Build a game demo by the end of term
- The suggested development engines are Unreal or Unity
  https://www.unrealengine.com/
  http://unity3d.com/
- State of the art commercial engines, with high rendering quality & sophisticated support tools

- drawback :
- steep learning curve & tons of things to learn

Development Platform

- You may build your game demo with other engines (though not recommended) e.g.

- **Panda3D**
  - Open source game engine, need Python programming much
  - http://panda3d.org/

- **OGRE3D**
  - Open source 3D graphics engine, state-of-art graphics, don't have game shell
  - http://www.ogre3d.org/

- **Open3D (O3DE)**
  - https://o3de.org/