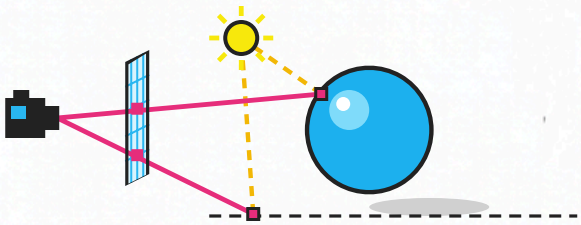
# BREAKING INTO GAME AS GRAPHICS ENGINEER

## 1. WHAT'S THE ROLE?

GRAPHICS PROGRAMMERS USE KNOWLEDGE OF HOW LIGHT SIMULATION WORKS TO PUT PIXELS ON SCREEN. AT A GAME STUDIO, GRAPHICS PROGRAMMERS WORK CLOSELY WITH ARTISTS TO CRAFT AND BRING UNIQUE MOOD AND VISUALS INTO THE GAME THROUGH LIGHTING.



## 2. WHAT TO LEARN:

- C++ KNOWLEDGE
- SHADING LANGUAGE (HLSL/GLSL, SLANG)
- LINEAR ALGEBRA, TRIGONOMETRY, A LITTLE CALCULUS
- A GRAPHICS API: OPENGL TO START, THEN VULKAN OR DIRECTX 12
- AN ENGINE: UNREAL OR UNITY
- AN AUTHORING TOOL: BLENDER, HOUDINI
- GPU DEBUGGING & PROFILING: RENDERDOC, PIX, NSIGHT

## 3. LEARNING RESOURCES

- RAY TRACING IN ONE WEEKEND (BOOK)
- PHYSICALLY BASED RENDERING, 4TH ED. (BOOK)
- REAL-TIME RENDERING, 4TH ED. (BOOK)
- LEARNOPENGL.COM
- SHADERTOY.COM
- SIGGRAPH "ADVANCES IN REAL-TIME RENDERING" COURSE TALKS

## 4. PORTFOLIO TIPS:

- BUILD SMALL, FINISHED PROJECTS: A RAY TRACER, A DEFERRED RENDERER, A SHADER EFFECT
- SHOW A BREAKDOWN: WHAT YOU BUILT, HOW YOU BUILT IT, AND THE RENDERING TIME
- PUT IT ONLINE WITH IMAGES/VIDEO
- JOIN GAME JAMS AND SHIP SOMETHING
- BE CURIOUS AND HAVE FUN!

## 5. COLLEGE PROGRAMS

- UPENN: VISUAL & INTERACTIVE COMPUTING
- USC: COMPUTER SCIENCE (GAMES)
- DIGIPEN: CS IN REAL-TIME SIMULATION
- RINGLING COLLEGE OF ART & DESIGN
- CMU: CS & ARTS (BCSA)
- UTAH: BS GAMES (EAE)
- UCSC: CS GAME DESIGN
- RIT: GAME DESIGN & DEV

Trung Le – Senior Graphics Engineer
trungtuanle90@gmail.com
trungtuanle.com

PORFOLIO