CSE 165: 3D User Interaction

Lecture #1: Introduction

Instructor

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Office hours: Tuesdays 3:30-4:30pm

Course Staff

- TA: Jimmy Ye
- Tutors: Weichen Liu, Ziyang Li
- See Piazza for office hours

Class Goals

- Provide in-depth introduction to spatial 3D user interfaces.
- Strengthen 3D graphics programming skills.
- Practice internet research and presentation skills.

Prerequisites

- CSE167 (Introduction to Computer Graphics) or equivalent
- Experience programming in C++ and OpenGL, or Unity 3D/Unreal Engine/Lumberyard
- You need to know how to debug code

Course Web Sites

- Course web site:
  - http://ivl.calit2.net/wiki/index.php/CSE165W2019
- TritonEd:
  - Grades and code/assignment submission
  - Wiki for video presentation scheduling
- Piazza:
  - Discussion boards for homework, etc.

Lectures and Discussion

- Lectures:
  - Tue/Thu 2:00-3:20pm in CSE B210
- Homework/midterm Discussion:
  - Mon 4-4:50PM in CSE B210
- Homework grading:
  - Fridays at 3pm in CSE B210

Assignment Submission on Ted

- Submissions are required for each homework project:
  - all source code and scripts you wrote
  - 3D models, textures, etc. that you created
  - No need to upload binary code or project files

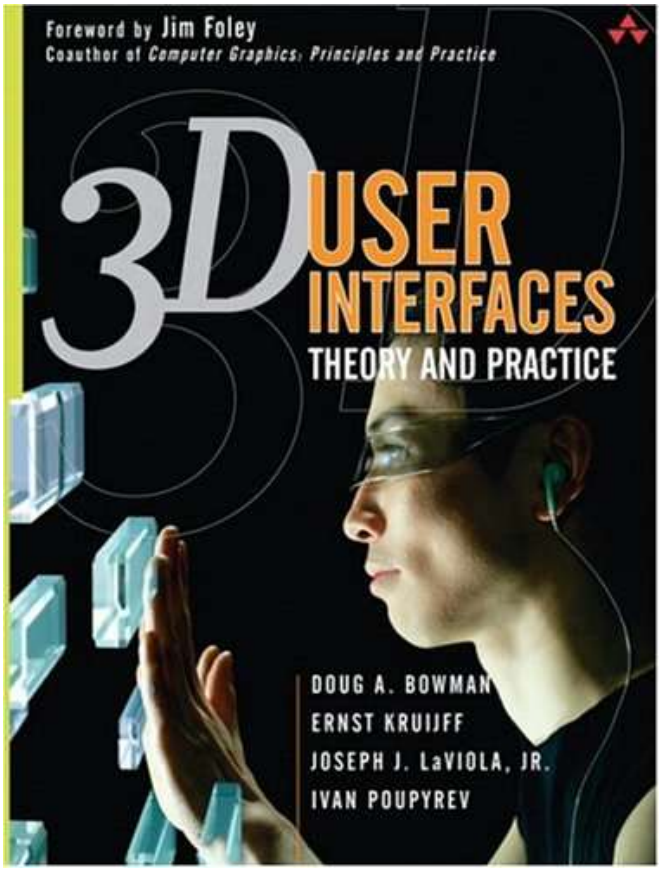
Recommended Textbook

Bowman, Kruijff, LaViola, Poupyrev

3D User Interfaces:
Theory and Practice

Addison Wesley Longman Publishing Co., Inc. Redwood City, CA, USA 2004

ISBN: 0201758679



Class Structure

- Lectures
  - Fundamentals of 3D user interfaces
- 4 structured homework assignments
  - 2 solo projects
  - 2 team projects
- Midterm
- Final Project
  - Teams of two
  - 3 weeks
- Video presentation
  - Presentation (4-5 minutes), followed by 1-2 audience questions

Grading

Project 1	15%
Project 2a	10%
Project 2b	10%
Project 3	15%
Final Project	25%
Midterm	20%
Video Presentation	5%

Cloud Storage

- Unless otherwise explicitly authorized, each student is completely responsible to keep their code, homeworks, design files and other course work off of publicly accessible internet sites.
- Example: it is not allowed to put code in a public Github repository.
- These rules expire after finals week.

Programming Assignments

- 1-2 weeks per project, 3 for final
- All projects involve 3D input devices, specifically Oculus Rift, Oculus Touch and/or Leap Motion

Programming Assignments

- Operating system: Windows
- Programming environment:
  - Unity 3D (recommended)
  - C++ with OpenGL or OpenSceneGraph
  - Unreal Engine 4
  - Amazon Lumberyard
- Grading in CSE basement lab 210
- Programming assignments need to be demonstrated to course staff in lab B210
- Grading queue managed by Autograder

Video Presentation

- Each student needs to present one video on an innovative 3D user interface from 2018/2019
- Submit your preferred presentation date, video title and link to TritonEd
- You have 4-5 minutes for the presentation
- Videos need to be accessible via a public URL so they can run off instructor's laptop (e.g., Youtube)

Late Policy

- Projects can be submitted up to 7 days late with a 25% penalty.
- Exceptions for documented extenuating circumstances only.

Permitted Software Tools

- Unity 3D, Unreal Engine, Amazon Lumberyard, Crytek CryEngine
- Visual Studio C++, GLFW, OpenGL, OpenSceneGraph
- Physics Engines: Bullet, PhysX
- Oculus SDK
- Leap SDK
- OpenVR
- OSVR
- 3D Modeling Tools (eg, Trimble SketchUp, Blender, Maya, 3ds Max)
- 3D model libraries (eg, Google 3D Warehouse)

Note on Slides

- Some of the lecture slides were originally created by Professor Joe LaViola (University of Central Florida), co-author of our text book

Final Projects from Last Year

- The Biggest (Coffee) Fetch Quest of 2018
  - By Agustin Rodriguez-Cabada
  - https://www.youtube.com/watch?v=UmVtlRByOJg&index=24&t=0s&list=PLINx2DKpKpTs_KAnzUslP5-AJ_C1Zc7fG
- Space Escape
  - By Ziyang Li, Weichen Liu
  - https://www.youtube.com/watch?v=I7WnONUtSMw&index=16&t=0s&list=PLINx2DKpKpTs_KAnzUslP5-AJ_C1Zc7fG