Session 03 - 08/29/17

Intro and Recap

- Miscellaneous reminders:
  - Still some new faces today. Probably last day that we'll have new people. I think you guys have filled up my class.
  - Remember that lecture slides, notes, and reading will be on github
  - First session of each week will usually be talking/discussion, second sessions will be more technical.
- Topic Recap
  - We want to come up with a working definition of AR/VR
    - *Inducing targeted behavior in an organism by using artificial sensory stimulation, while the organism has little or no awareness of the interference.* - LaValle
    - Immanuel Kant - Dual nature of reality
      - Physical world vs perceived world.
  - As far as this class is concerned, we're drawing the line here:
    - **Virtual Reality** = Where everything that the user sees & hears is controlled by the created experience.
    - **Augmented Reality** = You are adding things to the real world.
  - Difference b/w layering content on top of the world (Google Glass) and being part of the world
  - Talked about hololens as not the most ideal device in the real world but our ideal lab device
  - Two **huge** technologies that make it a killer AR headset
    - **Display** and **Sensors**
    - The Hololens is made by the same company as the Kinect
  - Even though it is not widely available, expensive, and technically only for "developers," it is **really good at what it can do**.
  - **Creative Coding** is a type of computer programming in which the goal is to create something expressive instead of something functional.
- Fix mistake from last time

AR/VR design principles continued

Interaction

- User interaction and expectations
  - What do we mean by **interaction**?
  - Show GUI vs text
- Why are we jumping into code right away?
  - We need code as **Triggers** in what we make
    - Beyond what we set up
    - Lets us change (Do) stuff in the scene
- Designing for interaction
  - What (what is the actual input and output)
  - How do we cue that interaction
  - The technology enables interactions
  - **expectations** and **teaching**
    - Example of baby trying to zoom/pinch on magazine after using iPad
  - **Skeuomorphism**
    - Apple notes/audio apps
- Screens vs Space
  - All of a sudden we have to think about context for what we make
    - VR Deals with it by creating environments
      - Netflix web example, netflix VR example
      - VR "Home" interfaces - need a context for the screens we use
        - Biggest criticism is that people cannot customize their own "home" space
  - Not constrained by available resolution, but by space in the real world
  - Interesting challenge about this is that we're moving towards unknown. There are no answers
  - Scale really matters
    - 1:1 relationship with space
    - AR apps can measure real world units
- Two concepts I want to focus on today:
  - **Manipulation**
    - UI Fidelity/Ease (expectation)
    - Types of manipulation
      - 2D (we take this for granted but it was not always this way)
      - 3D examples
        - Power Glove

            - LEAP sensor
            - Oculus/Vive handles
        - Hololens designers focused on defining a set of interactions to work with
            - gaze
            - two gestures + tracking
            - voice input
                - All the big tech companies have voice plays right now
        - Show 3D/VR keyboard
    - **Exploration**
        - Natural, but limited by available space.
        - Case study: Overheard
        - JPL - 1:1 models of rovers for designers to walk around
        - Exploration can be a manipulation too: content can react to your position

HoloLens Case Studies

- Think about:
    - Manipulation
    - Exploration
    - Immersion/emotion
    - and most of all why? Why why why?

Group Exercise

- *When asked, "How could you possibly have done the first interactive graphics program, the first non-procedural programming language, the first object oriented software system, all in one year?" Ivan replied: "Well, I didn't know it was hard."*
- Come up with examples of:
    - Something Digital you Wish you could touch?
    - Something big you wish you could see small?
    - Something small you wish you could see big?
    - Something invisible you wish you could see?
- Specifically think about places where technology is a *barrier*.
- Combine similar ideas

- Separate complex ideas
- Find Cause & Effect Relationships

Assignments for next time

- John Underkoffler - TED Talk and Article
- Design For Humanity - Parts 1, 2, 3

Extra reading

This is not required! Just some additional resources you might find interesting/relevant/funny.
The **Mother of all Demos** (video, wikipedia) was Douglas Engelbart's first public demonstration of the graphical user interface and is often referred to as one of a handful of distinct events that changed computing forever.
The Encyclopedia of Human-Computer Interaction, 2nd Ed.
Skeuomorphism is Dead, Long Live Skeuomorphism
An Open-Source Keyboard to Make Your Own
Entire Gadget Lab Episode of the JPL hololens demo