Principles of AR/VR Design

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Goals

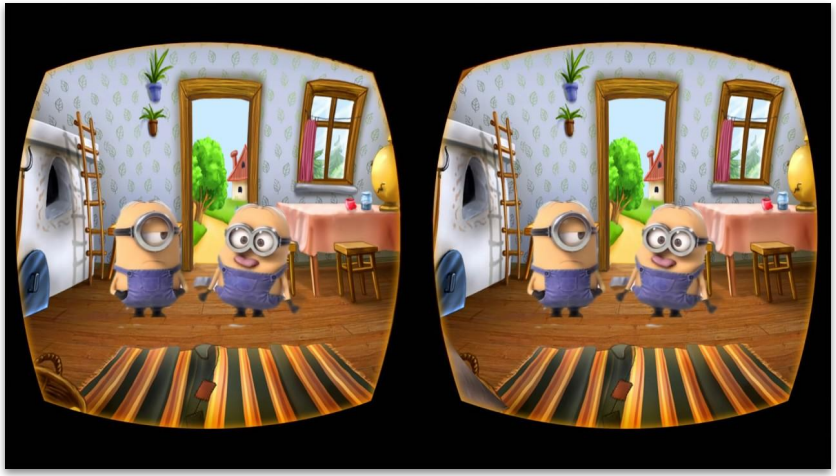
1. Design principles by category

Design Principles

1. Visual
2. UI/UX
3. Locomotion
4. Sound
5. Social
6. Presence
7. Core Ideas

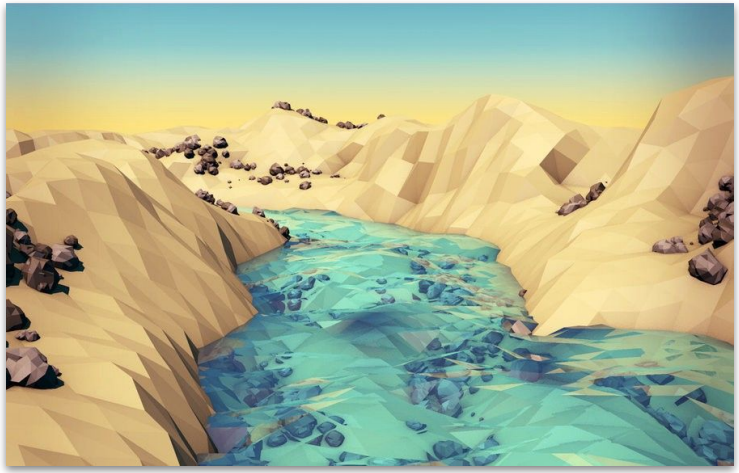
Visual

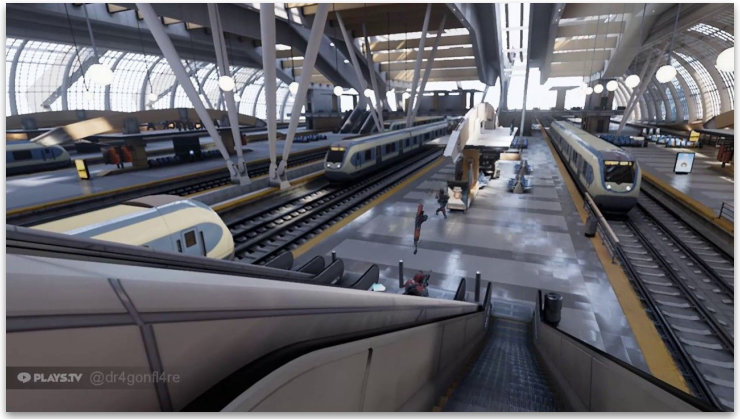
Realism is not super important



Create “world rules” and follow them

- Any world can be immersive, as long as its consistent
  - Build trust between the user and the world

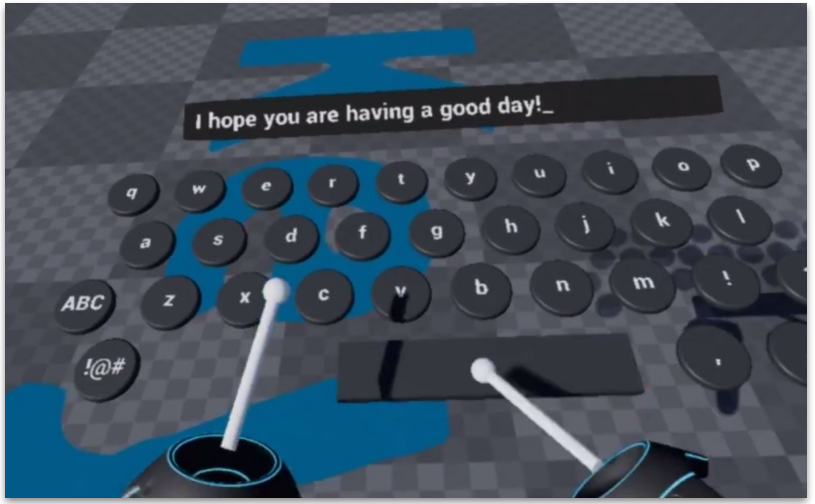




Consider POV

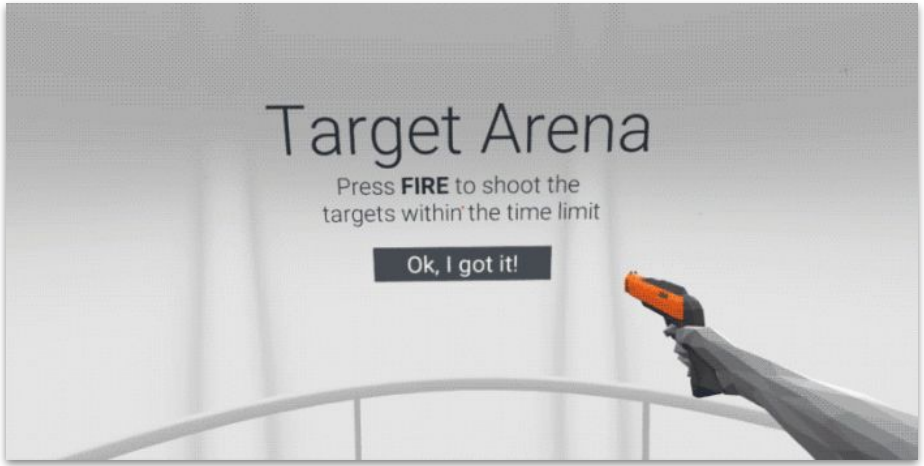
UI/UX

You don’t need to mimic real life



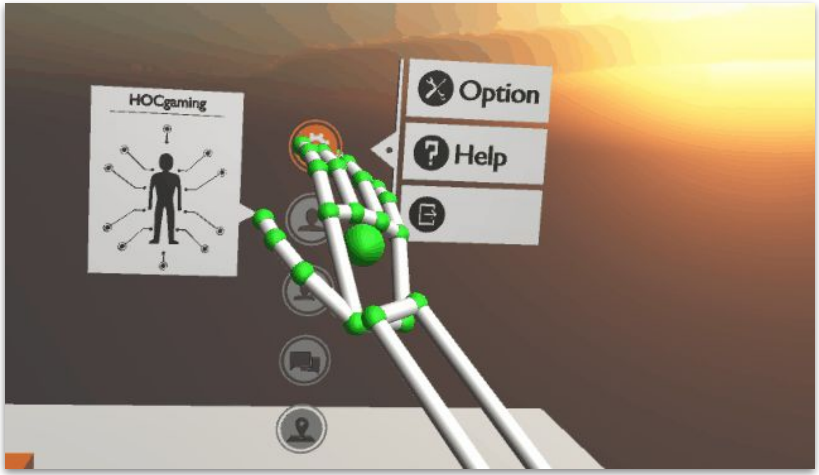
Make use of 3D space

- Don’t be restricted by 2D design paradigms, and think outside the square.



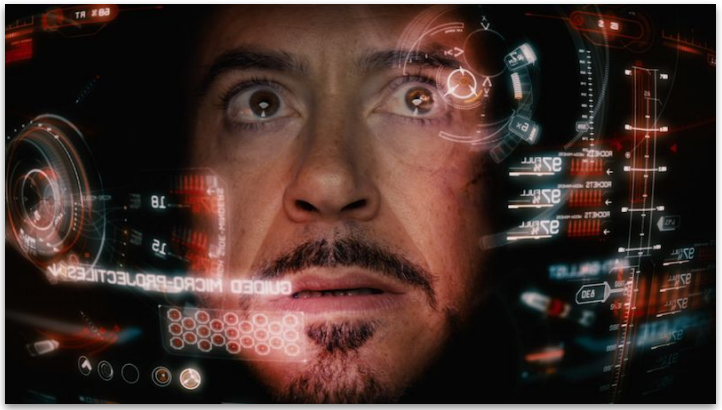
Don’t tire out the user

- Every movement has an energy cost
- Make frequent actions easy to do



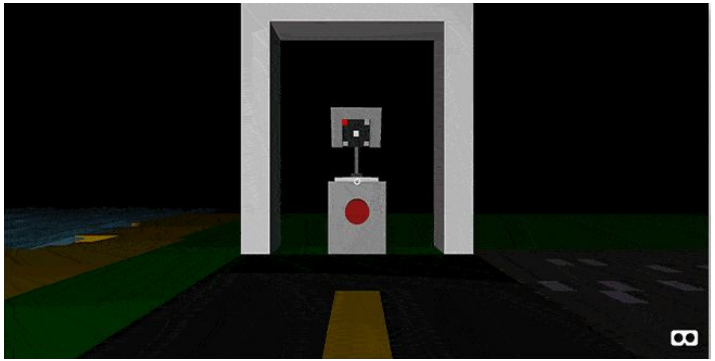
World space vs screen space

- World space: exist as objects in the environment (diegetic)
- Screen space: attached to the user's perspective (non-diegetic)



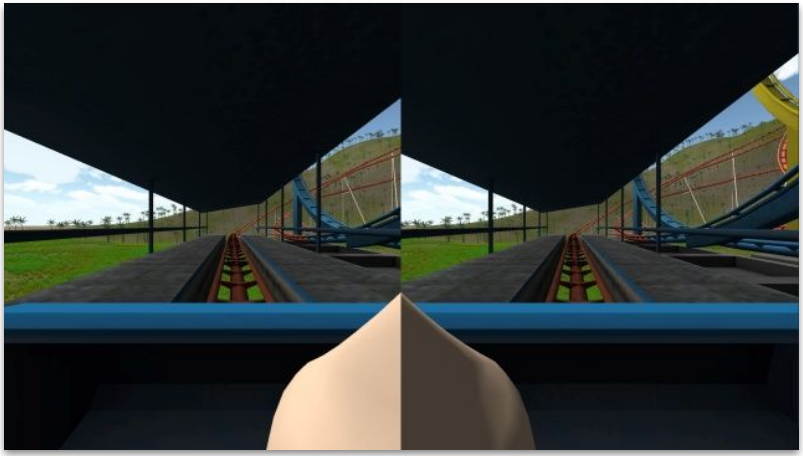
Locomotion

Avoid acceleration



Users feel changes in velocity, not velocity itself.

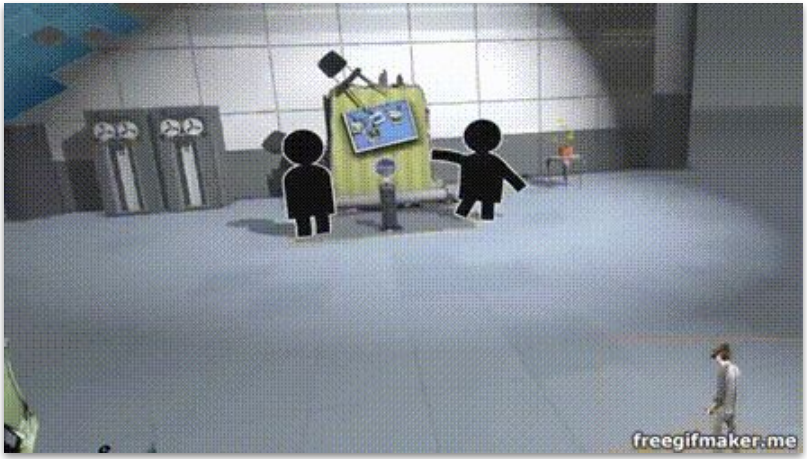
Reference frames can help



Presence

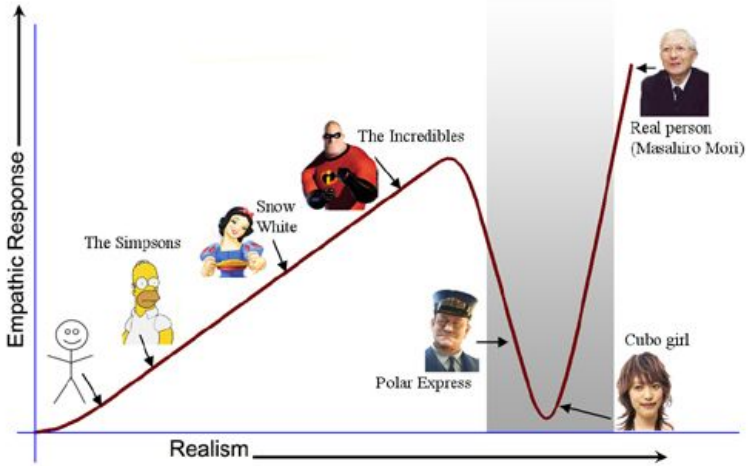
Never forget emulation promises...

- Never forget your emulation of sense → don't betray your user without intent (Hand Emulation)



Uncanny valley

- An approximation of realism is sometimes *worse* than a fictional parody

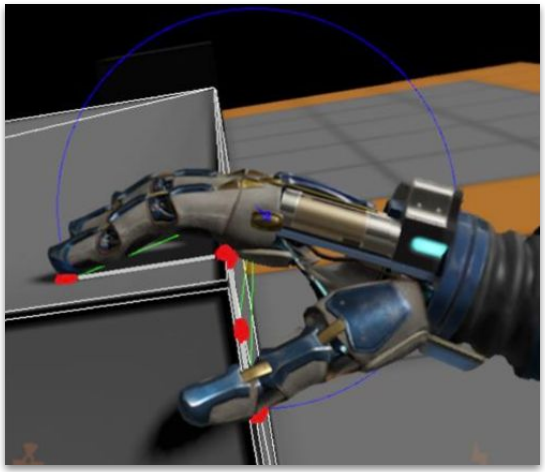


Feeling good > *Feeling* real

- Missing thrown snowballs 90% of the time might be realistic… but not fun

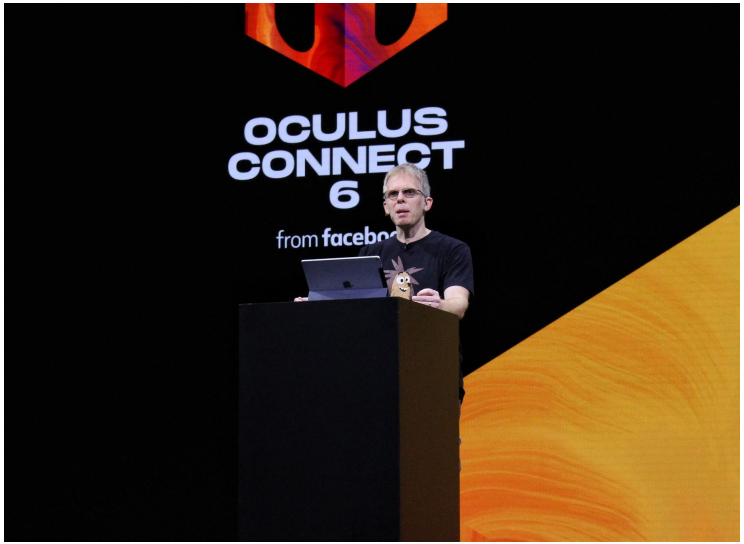
Avatars?

- Physical avatars can dramatically *help or hurt* presence - depends on execution



Sound

Sound FX add a LOT to a game



Social

Good ‘multiplayer’ is great

Make sure ‘multiplayer’ is meaningful

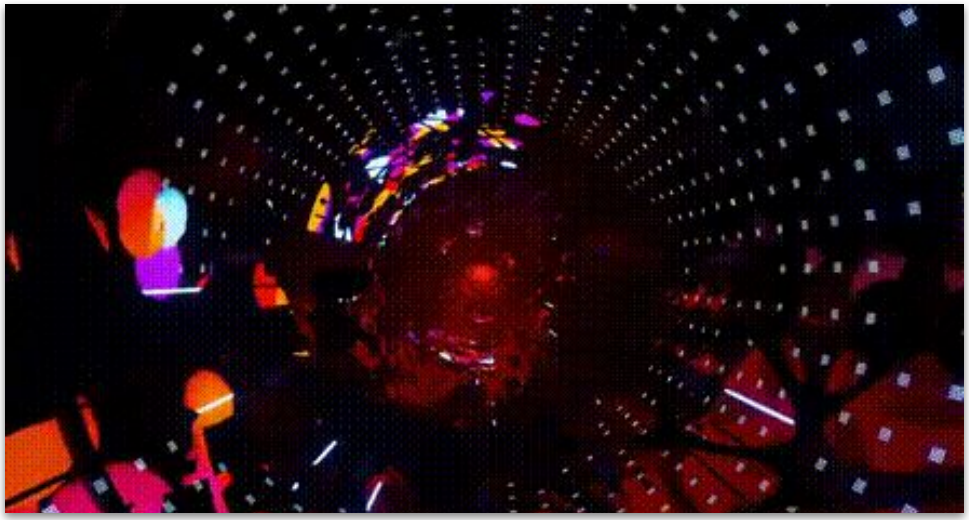
- A bad social experience is worse than no social experience at all
  - The stakes are higher in VR

Consider giving players “safety bubble”

Core Ideas

Take advantage of virtual reality

- Ask yourself: what will VR do for your application?

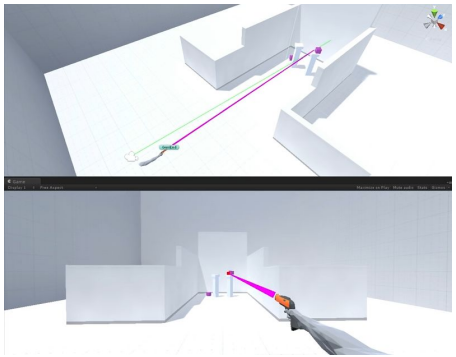


Additional Things to Keep in Mind for XR Design

- Make Onboarding Simple
- Keep It Predictable
- Leave Clues
- Make the Experience Useful
- Delight the User, but Keep them Grounded
- Design for a Diverse Set of Users

Conclusion

- Use these as guidelines to motivate your own explorations
  - Learn from developers' past experiences
  - **Not** hard and fast truths
  - **Not** all-encompassing
  - **Lots** of open questions
- Be creative, and have fun!

Administrivia

- **HW5** has been officially assigned, due **night of next class**
  - Learning Unity physics and raycasting
  - Find it on the class website!
- **LAB 4**
  - xr.berkeley.edu/decal/