



# CSE 165: 3D User Interaction

Lecture #16:

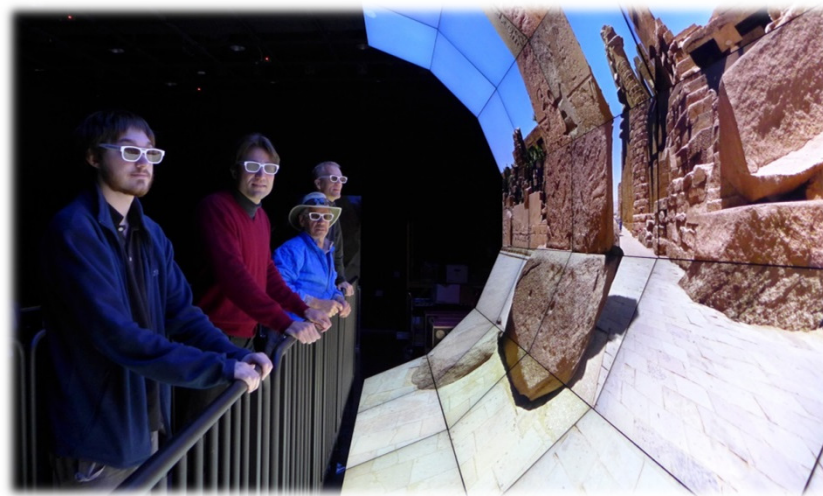
3D UI Design Part 3

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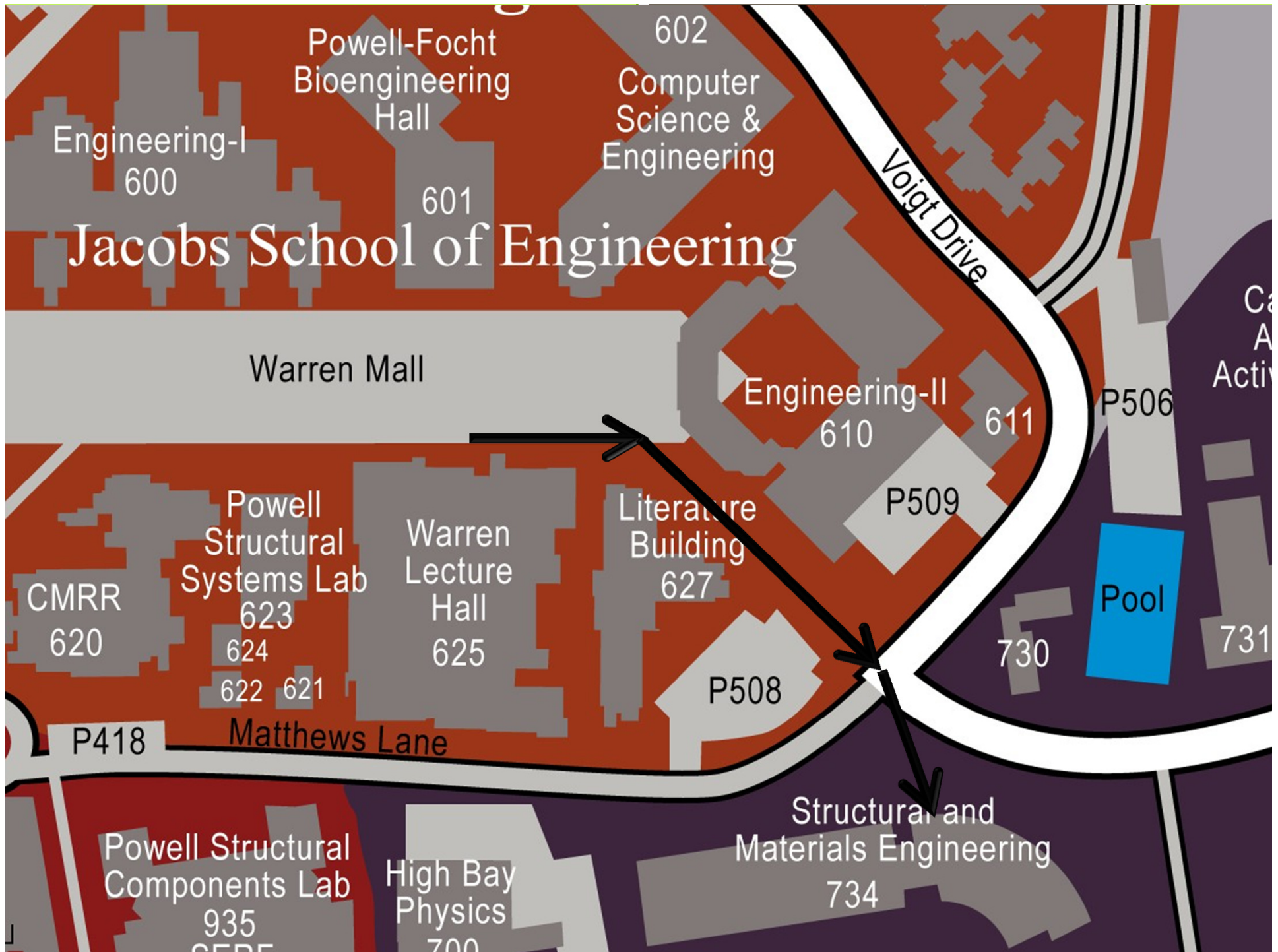
# Announcements

- Homework 5
  - Due March 17<sup>th</sup> at 11:30am
  - To be presented in CSE 1202
- Input devices can be returned
  - this Friday
  - in office hour Tue 1:30pm
  - after final presentation
  - any time I'm in the office
- WAVE tour next Tuesday

# Tour of WAVE Lab



- Next Tuesday:
  - Meet in classroom
  - See paper presentations
  - Walk to SME building room 141



# 3DUI Design Strategies

- Designing for humans
  - Match design to human strengths
- Inventing 3D interaction techniques
  - Creative exploration of 3D UIs

# Inventing 3D User Interfaces

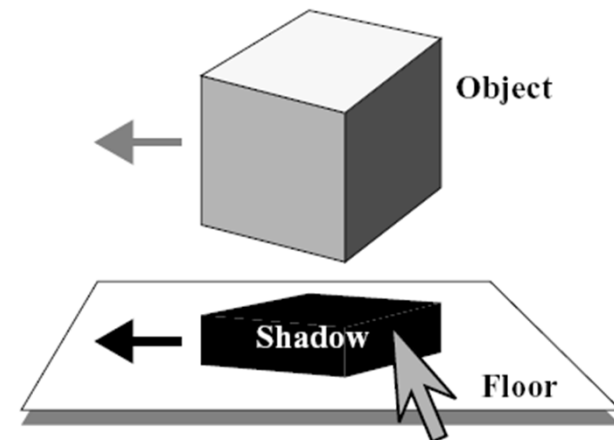
- **Realistic** (or isomorphic)
  - Borrowing from real world
- **Magical** (or non-isomorphic)
  - Deviating from the real world and introducing artificial, “magical” techniques
- Continuum between realistic and magical

# Inventing 3DUIs – Simulating Reality

- Tried and true approach: replicate real world
  - as closely as possible
  - bring in certain elements
- Important for simulation applications
  - flight simulators
  - medical training
  - phobia treatment
- Dependent on application
- Advantages
  - User can utilize everyday experience
  - Uses system designer's intuition
- Disadvantages
  - Limitations of technology do not allow exact realism
  - Introduces limitations of the physical world into the virtual world

# Inventing 3DUIs – Adopting from the Real World

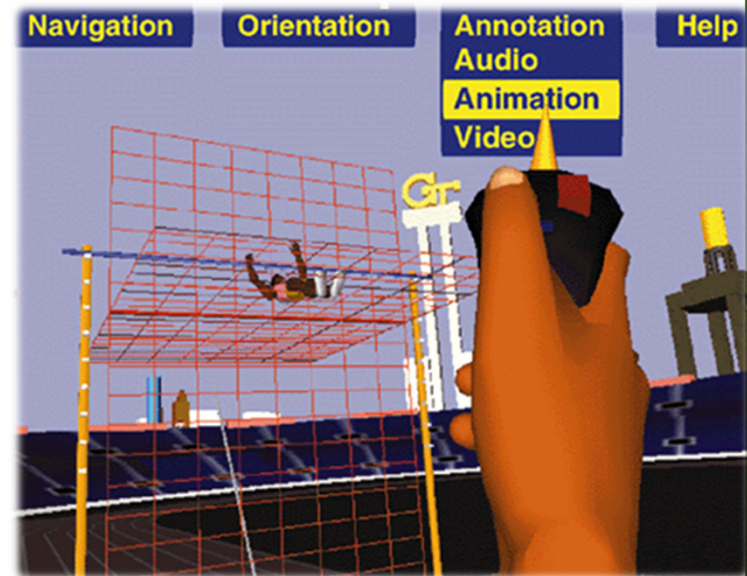
- Adopt artifacts, ideas, philosophies, domains
- Architecture and movies
- Real-world metaphors
- Examples
  - virtual vehicle
  - flashlight
  - shadows





# Inventing 3DUIs – Adapting from 2D

- 2D UIs studied extensively
- Most people fluent with 2D interaction
- Can be easier to use than 3D menus
- Approaches
  - 2D overlay
  - 2D widgets in 3D environment
  - 2D interaction with 3D objects
  - UI on separate device (eg, tablet)



# Inventing 3DUIs – Magic and Aesthetics

- Real power of 3DUIs
  - better reality
  - alternate reality
- Overcome human limitations
- Reduces effects of technological limitations



<http://www.cantonmagicrafters.com/images/rabbit.jpg>

# Magic: Using Cultural Clichés & Metaphors

- Examples: Flying carpet, Go-Go, WIM
- Advantages:
  - easy to understand if you know the metaphor
  - usually very enjoyable
  - many metaphors are available
  - need not to be learned
- Disadvantages:
  - metaphors can be misleading
  - metaphors are often rooted in culture
  - difficult to come up with good magic metaphors