Lecture 3

Mobile Gameplay
Focus of Today’s Talk

iPhone/iPod Touch  
iPad
Focus of Today’s Talk

Android Phone

Android Tablet
Not The Focus of Today’s Talk

Why Not?

- “Traditional” input schemes
  - They all have gamepads
  - DS has stylus, which acts like a mouse pointer
- Supports classic gameplay
  - Games often “miniaturized” versions of console/PC titles
- Market is very hardcore
- Not modern mobile market
Challenge: Input Modality

- Don't have standard gamepad controls
  - Add-on hardware is in infancy
  - Not standard, few games use
- Loss of a lot of functionality
  - D-Pads, joysticks for avatar control
  - Buttons for performing core actions
- Have to **rethink game input**
The Cheap Way Out
The Cheap Way Out

Less favored by developers these days

No tactile feedback to user (finger covers visual feedback)

Takes valuable real-estate (screen covered at all times)
So What Can We Do?

- (Multi) Touch Controls
  - Pointing, dragging
  - Clicking, selecting
  - More advanced gestures

- Accelerometer Support
  - Tilting
  - Rotating
Touch: Basic Approach

- Can use touch interface like a **mouse**
  - Touch to click on a point,
  - Trace from touch to drag

- **Port mouse-heavy PC/Mac games**
  - Particularly strategy games/RPGs

- **Keyboard exists, but is limited**
  - Have to obscure screen to pull up keyboard
  - Use very sparingly (e.g. save file)
Example: *Plants vs. Zombies*
4152 Example: Gathering Sky
Balancing Multitouch

• Mouse games are "balanced" for a single pointer
  • Multitasking requires a lot of back and forth
  • Challenge is to do actions in an efficient order

• Multitouch eliminates this challenge
  • Can quickly move fingers anywhere
  • Can use multiple fingers at once
  • Example: Whack-a-Zombie

• Need to rethink gameplay
Size Matters

• Small screen makes multitouch hard
  • True multitouch only on a tablet
  • Phones are largely limited to gestures

• Fingers are fatter than mouse pointers
  • I did not mean to click that!
  • Also, fingers cover up the screen
  • Touch needs to be very forgiving
Click versus Pointing

- In a PC game, can hover mouse above location
  - Gives pop-up menus for gathering information
  - Key feature in RPGs, strategy games

- How can we distinguish point from click?
  - Could make clicking more cumbersome (e.g. verification dialogs)
  - But slows down the game
  - Any better solutions?
Example: *Avadon*
Touch: Gestures

- Can also leverage device **gestures**
  - Manipulation strokes common to device
  - **Example**: Pinching for zoom
  - **Example**: Rotating (object, screen)

- Natural for camera control

- **Design Approach**:
  - Think about how used in normal apps
  - How do you leverage this in a game?
Basic Gestures

- **Tap**
- **Double Tap**
- **Tap and Hold**
- **Flick**
- **Pinch**
- **Spread**
- **Rotate**
- **Drag (Scroll)**
Simple Multitouch Gestures

Two Fingers

- Tap
- Tap/Press
- Double Tap
- Drag

Three Fingers

- Tap
- Double Tap
- Swipe
- Drag
Simple Multitouch Gestures

Two Fingers
- Tap
- Tap/Press
- Double Tap
- Drag

Sort of possible to get position

Three Fingers
- Tap
- Double Tap
- Swipe
- Drag

Getting position is largely hopeless
4152 Example: *Phantom Escape*
Touch: Natural Controls

- Successful games strive for **natural controls**
  - Verb controlled by a single movement/gesture
  - Gesture has a very natural physical feel to it
  - Maps naturally on to the action in the game

**Examples**

- Cutting (Cut the Rope)
- Tracing  (Flight Control)
- Dragging (Nitali)
- Pulling  (Angry Birds)
4152 Example: *Flick Ship Spaceship*
Example: *Zen Bound*
Example: *The Room*
Example: *Monument Valley*
Custom Gestures: A Warning

- Leverage built-in gestures APIs
  - iOS/Android have libraries
  - Easy to use and stable
  - Custom gestures can slow production, *derail the game*

- But not all gestures supported
  - Circle around a target
  - 3 finger support only in OS X
  - Complex “spell wards”

- Borrow free libraries!
Touch: Avatar Controls

- Several (non-joystick) options for movement
  - Drag the character
  - Point to a waypoint
  - Point to direction

- But how to indicate avatar actions?
  - Want to move and act at same time

- One Solution: put actions into movement modes
  - Drag versus waypoint
  - Press+hold drag versus drag
Example: *Spider*
Example: *Continuity 2*
Example: *Night Sky*
Example: Type: Rider
Example: *Type:* Rider

### Settings

- **Controls**
- **Sound**
- **Quality**
- **Reset**

*Intuitive, Buttons, Tilt*
Accelerometer: Basics

- **Can** detect rotational movement
  - Rotate from flat plane
  - Rotate around edge

- **Cannot** detect other movement
  - Lateral movement of device
  - Absolute position of device

- Ideal mechanic for
  - Marble-style games
  - Steering/On-rails games
Example: Labyrinth
Accelerometer + Touch

- Solves the problem of actions
  - Use accelerometer for movement
  - Use touch for other actions

- But have to hold the device
  - Hard to gesture with hand that holds

- **Idea**: Keep actions unobtrusive
  - Avoid "button mashing" mechanics
  - Allow touch to use thumbs as much as possible
Example: *Mass Effect Galaxy*
Example: Rolando
Example: *Knightmare Tower*
Accelerometer: Challenges

- The control device is the **display**
  - Extreme controls make game hard to see
  - Even worse when combine with touch
- **Even basic movement is a challenge**
  - Hard to quickly change directions
  - Prone to overcorrection
- **Example: Labrynth**
Final Word: Know Your Audience

• Phone games are meant for "quick play"
  • Must be able to start, play, and save in 2 minutes
  • Should be able to pick up where left off quickly
  • Controls should be (relatively) simple

• Tablet games can be more complex
  • Supports longer play units (why?)
  • Larger screen permits more complex controls
  • Games are closer to PC indie games
  • And can also cost more!
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