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

Mobile Interfaces
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: Apsis
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
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)
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!
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)
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Touchable: 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: MicroPig
Example: *Zen Bound*
Example: The Room
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
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!