Gestures

Mobile Application Development in iOS

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Outline

• Discrete gestures
  – Tap, Drag, Flick, Swipe, Double Tap, Long Press

• Continuous gestures
  – Pinch, Rotate

• Multi-touch gestures

• Custom gestures
Adding Gestures

• Via Storyboard
  – Drag into view
  – Ctrl-drag to IBAction
  – May need to connect delegate to view
    • Allow simultaneous gestures
Adding Gestures

• Programmatically
  – Create subclass instance of UIGestureRecognizer
  – view:addGestureRecognizer

```swift
-(void)viewDidLoad {
    [super viewDidLoad];

    UITapGestureRecognizer *doubleTapRecognizer = [[UITapGestureRecognizer alloc] initWithTarget:self action:@selector(doubleTapRecognizer:)];
    doubleTapRecognizer.numberOfTapsRequired = 2;
    [self.view addGestureRecognizer:doubleTapRecognizer];
}

-(void)doubleTapRecognizer:(UITapGestureRecognizer *)sender {
    _myLabel.text = @"Double Tap";
}
```
Continuous Gestures

• Pinch, Rotate
• Gesture recognizer called whenever state changes
  – UIGestureRecognizerStateChangedBegan
  – UIGestureRecognizerStateChangedChanged
  – UIGestureRecognizerStateChangedEnded
  – UIGestureRecognizerStateChangedCancelled
Continuous Gestures

```objc
-(IBAction) pinchRecognizer:(UIPinchGestureRecognizer *)sender {
  if ([sender state] == UIGestureRecognizerStateEnded) ||
  ([sender state] == UIGestureRecognizerStateCancelled)) {
    _myLabel.font = [UIFont systemFontOfSize:17];
  }
  if ([sender state] == UIGestureRecognizerStateChanged) {
    _myLabel.font = [UIFont systemFontOfSize:(17 * sender.scale)];
  }
}

-(IBAction) rotationRecognizer:(UIRotationGestureRecognizer *)sender {
  CGAffineTransform transform;
  if ([sender state] == UIGestureRecognizerStateEnded) ||
  ([sender state] == UIGestureRecognizerStateCancelled)) {
    transform = CGAffineTransformMakeRotation(0);
    [_myLabel setTransform:transform];
  }
  if ([sender state] == UIGestureRecognizerStateChanged) {
    transform = CGAffineTransformMakeRotation([sender rotation]);
    [_myLabel setTransform:transform];
  }
}
```
Multi-Touch Gestures

• Enable multi-touch in view

```objective-c
- (void)viewDidLoad {
    [super viewDidLoad];
    // Do any additional setup after loading the view, typically from a nib.
    self.view.multipleTouchEnabled = YES;
    ...
}
```

• Set number of touches in gesture

```objective-c
UITapGestureRecognizer *doubleTapRecognizer = [[UITapGestureRecognizer alloc]
    initWithTarget:self action:@selector
doubleTapRecognizer:));
doubleTapRecognizer.numberOfTapsRequired = 2;
doubleTapRecognizer.numberOfTouchesRequired = 2;
```
Custom Gestures

- Define own subclass of UIGestureRecognizer
- Implement touch event methods
- Add gesture to view

MyGesture.h

```cpp
#import <UIKit/UIKit.h>
#import <UIKit/UIGestureRecognizerSubclass.h>

@interface MyGesture : UIGestureRecognizer
- (void)reset;
- (void)touchesBegan:(NSSet *)touches withEvent:(UIEvent *)event;
- (void)touchesMoved:(NSSet *)touches withEvent:(UIEvent *)event;
- (void)touchesEnded:(NSSet *)touches withEvent:(UIEvent *)event;
- (void)touchesCancelled:(NSSet *)touches withEvent:(UIEvent *)event;
@end
```