# Praktikum Entwicklung von Mediensystemen mit iOS

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# Today

- Assignment 1 & Provisioning Profiles
- More iOS:
  - Text and touch input
  - Accelerometer
  - Animations and drawing
- Assignment 2

# Text Input

- UITextField
- Requires UITextFieldDelegate
- Process text input:

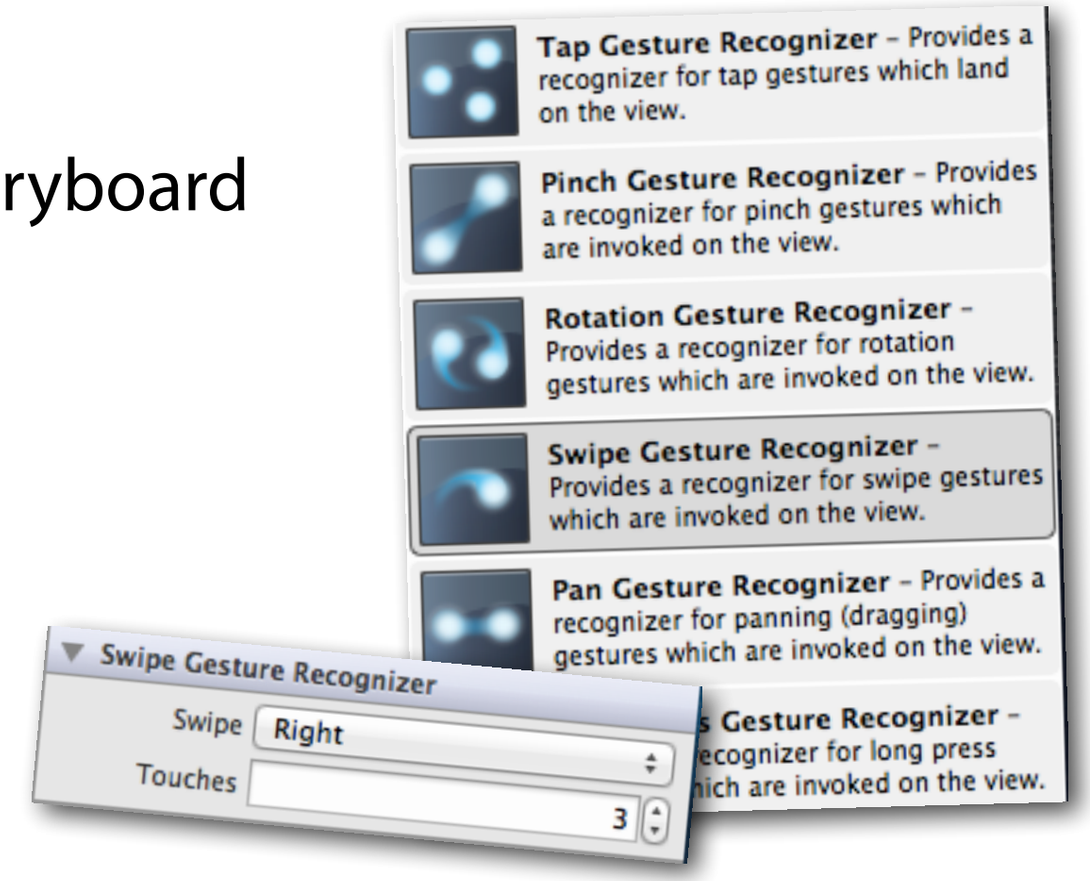
```
// dismiss keyboard
-(BOOL)textFieldShouldReturn:(UITextField *)textField {
    // calls textFieldShouldEnd where you can check
    // for invalid input
    [textField resignFirstResponder];
    return YES;
}

// get text input
-(void)textFieldDidEndEditing:(UITextField *)textField {
    NSString* textInput = textField.text;
}
```


- Use UITextView for multiple lines of text

# Touch Input

- Use gesture recognizers
  - Init in View Controller or add in Storyboard
  - Create IBAction:

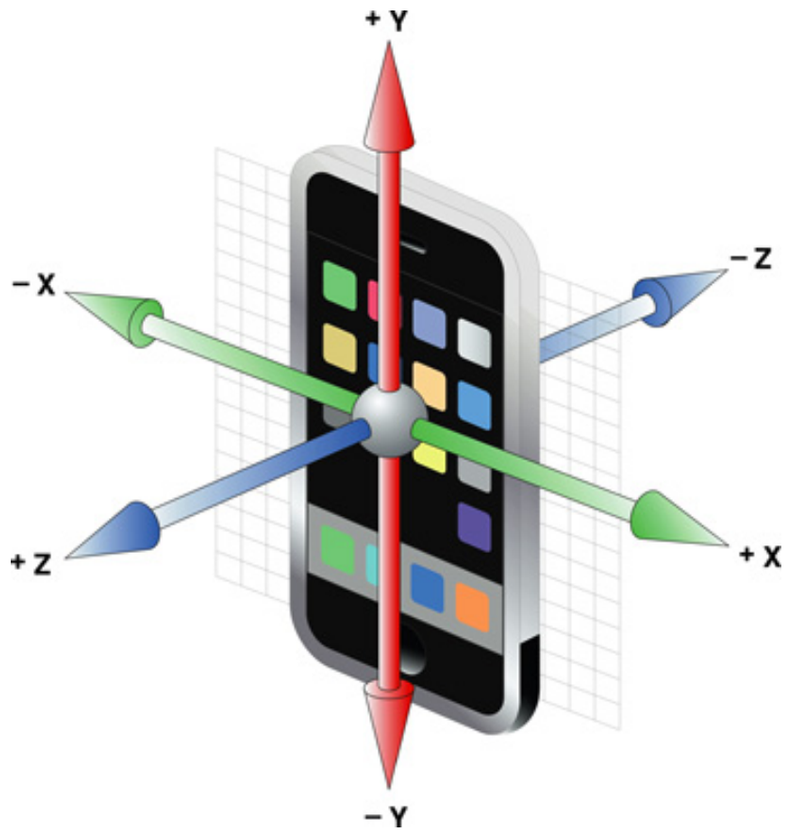
```
- (IBAction)swipeRecognized:(id)sender {
    // handle gesture
}
```




- Use touches methods, e.g.:

```
-(void)touchesBegan:(NSSet *)touches withEvent:(UIEvent *)event {
    UITouch *touch = [touches anyObject];
    CGPoint p = [touch locationInView:self.view];
    // Use p.x and p.y
}
```

# Accelerometer




- g-force values for x, y, z (1g = normal acceleration caused by gravity)
- Access accelerometer by singleton object (requires Delegate)

```
[[UIAccelerometer sharedAccelerometer] setDelegate:self];
```

# Accelerometer

- Get sensor data via Delegate method:

```
- (void)accelerometer:(UIAccelerometer *)accelerometer didAccelerate:
(UIAcceleration *)acceleration {
   NSLog(@"x acceleration is %d", acceleration.x);
}
```

- Detect device orientation: Low-pass filter removes instant motion.
- Detect instant motion (e.g. shaking): High-pass filter removes gravity component.

# Location

- CLLocationManager
- Configuration (requires Delegate):

```
#import <CoreLocation/CoreLocation.h>

CLLocationManager *locationManager = [[CLLocationManager alloc] init];
[locationManager setDesiredAccuracy:kCLLocationAccuracyBest];
[locationManager setDelegate:self];
[locationManager startUpdatingLocation];
```

- Get location data via Delegate method:

```
- (void)locationManager:(CLLocationManager *)manager didUpdateLocations:(NSArray *)locations
    // Use locations to get longitude and latitude
}

- (void)locationManager:(CLLocationManager *)manager didExitRegion:(CLRegion *)region
- (void)locationManager:(CLLocationManager *)manager didEnterRegion:(CLRegion *)region
```

# Animations - Example

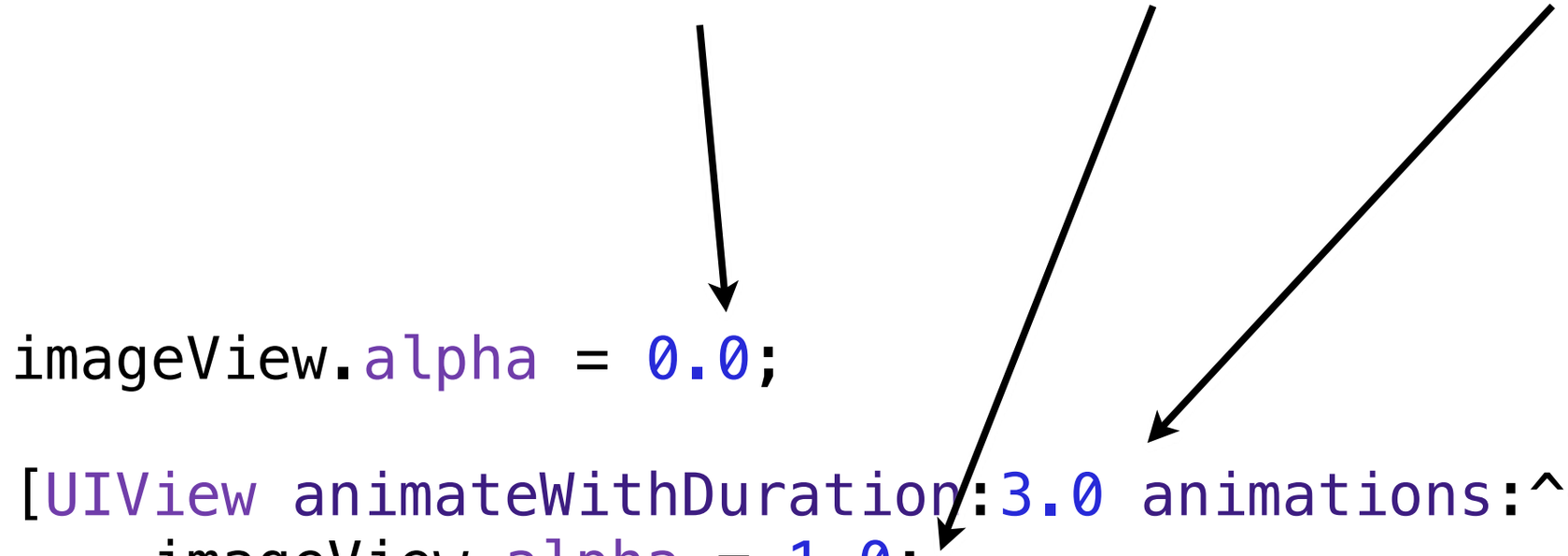

Sliding Sam

# Animations

- Views can fly around, rotate, fade in/out and much more.
- Animations can make your app appear much more exciting.
- The following properties of the UIView class can be animated:
  - `@property frame`
  - `@property bounds`
  - `@property center`
  - `@property transform`
  - `@property alpha`
  - `@property backgroundColor`
  - `@property contentStretch`

# Fade In / Out

- Change alpha from 0 (transparent) to 1 (opaque) in 3 seconds:

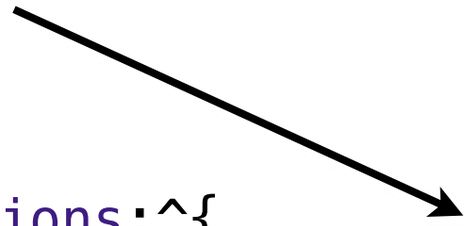


```
imageView.alpha = 0.0;

[UIView animateWithDuration:3.0 animations:^{
    imageView.alpha = 1.0;
}];
```

- This Block syntax makes your code easier to read. You don't have to memorize it - code completion is your friend :-)

# Rotate

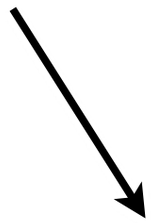
- Rotate by 90° in 3 seconds:



```
[UIView animateWithDuration:3.0 animations:^{
    imageView.transform = CGAffineTransformMakeRotation(M_PI_2);
}];
```

# Scale

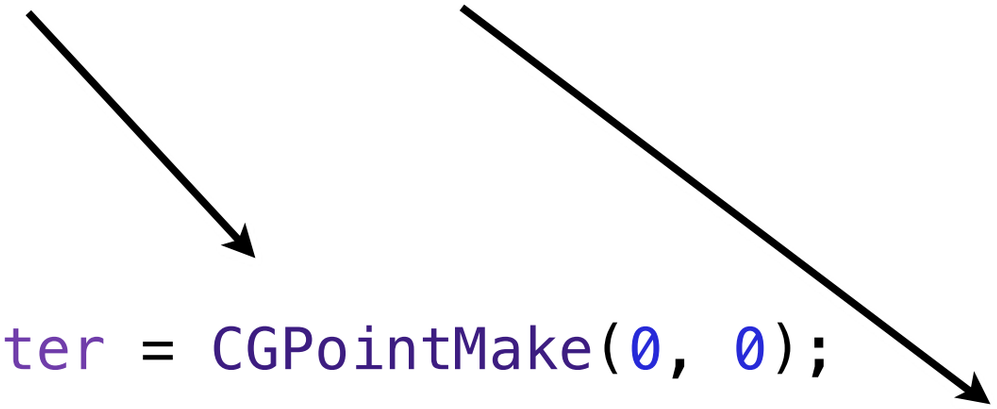
- Scale from 10% to 100% in 3 seconds:



```
imageView.transform = CGAffineTransformMakeScale(0.1, 0.1);

[UIView animateWithDuration:3.0 animations:^{
    imageView.transform = CGAffineTransformMakeScale(1, 1);
}];
```

# Move

- Move from origin to center:



```
imageView.center = CGPointMake(0, 0);

[UIView animateWithDuration:3.0 animations:^{
    imageView.center = imageView.superview.center;
}];
```

# Animation Options

- Multiple animations at once are possible
- Options examples:
  - `UIViewAnimationOptionCurveEaseInOut`:
    start slowly, accelerate, stop slowly
  - `UIViewAnimationOptionTransitionFlipFromLeft`:
    flip around vertical axis
- Completion examples:
  - Start another animation
  - Play sound

# Drawing

- Instead of using PNGs, you can draw custom shapes with CoreGraphics (a.k.a. CG or Quartz 2D).
- Example with drawRect:

```
@interface CustomShape : UIView  .h
```

```
- (void)drawRect:(CGRect)rect    .m
{
    CGContextRef context = UIGraphicsGetCurrentContext();
    CGContextSetFillColorWithColor(context, [UIColor redColor].CGColor);
    CGContextFillEllipseInRect(context, rect);
}
```

# Drawing

- Core Graphics also supports shadows, gradients, layers etc. (documentation)

- Image filters à la Instagram can be done with Core Image (documentation)

- 3D drawing can be done with OpenGL (documentation)

# Assignment 2

- Do 2 out of 4 programming tasks
  (choose whichever interests you most)
- Due in two weeks (8.5.14), upload to Uniworx
- For the project phase, form teams of four