Praktikum Entwicklung von Mediensystemen mit

iOS

Sommersemester 2013

Fabius Steinberger, Dr. Alexander De Luca

- Honors Degree in Technology Management at the Center for Digital Technology and Management (Barerstr. 21).

- Open for students from TUM and LMU, mainly from Computer Science, Engineering and Business Administration.

- 45 ECTS in about 3 semesters + 1 semester abroad.

- All courses are in english, interdisciplinary and with industry partners.

- To start in summer 2013, apply until May 30th 2013.

- www.cdtm.de

- http://vimeo.com/41021086

INFO EVENTS:

CDTM
Thursday, May 23rd, 7-9pm
Barer Str. 21, 2nd floor

TUM
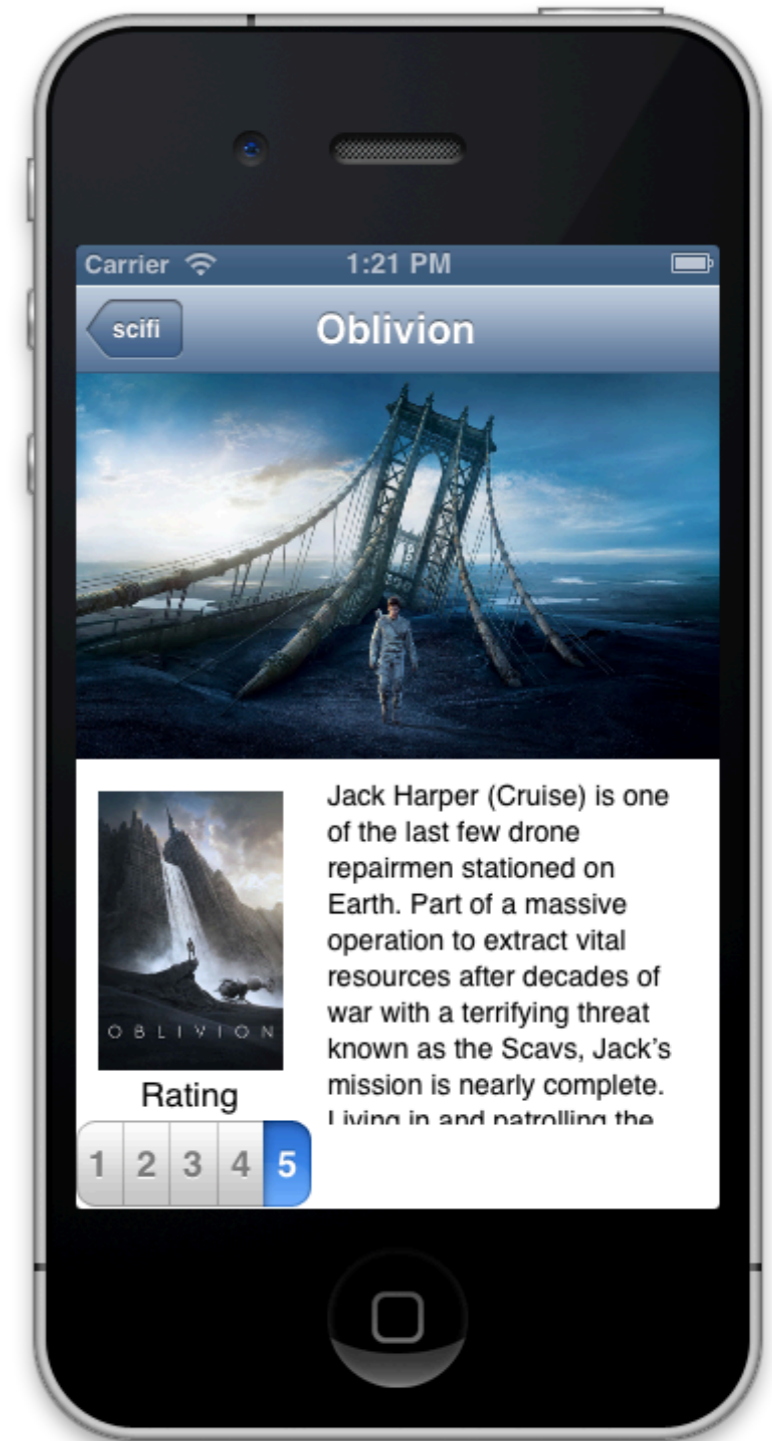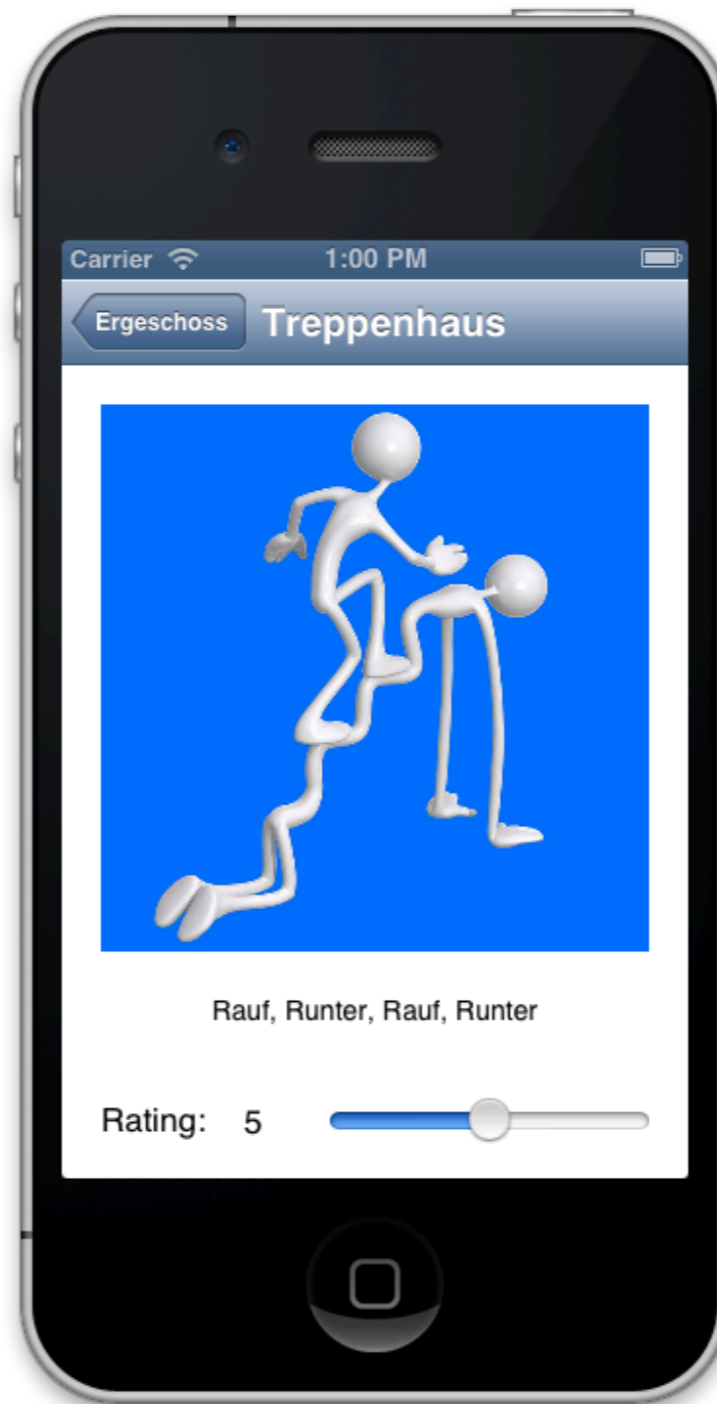Wednesday, May 15th, 2:15-4pm
Boltzmannstr. 15, MW 0337, EG

LMU
Thursday, May 16th, 6-8pm
Geschwister-Scholl-Platz 1, A 017

Today

- Assignment 2

- More iOS:

  - Text and touch input

  - Accelerometer

  - Animations and drawing

- Assignment 3

- Outlook

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
    }
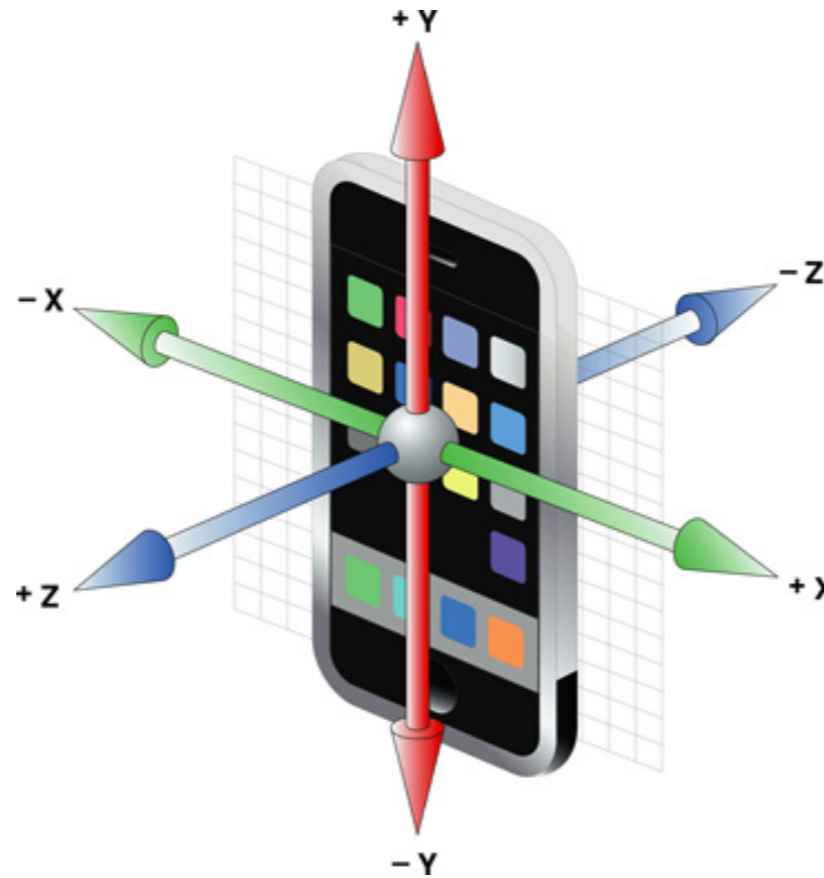    ```



- 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
    }
    ```
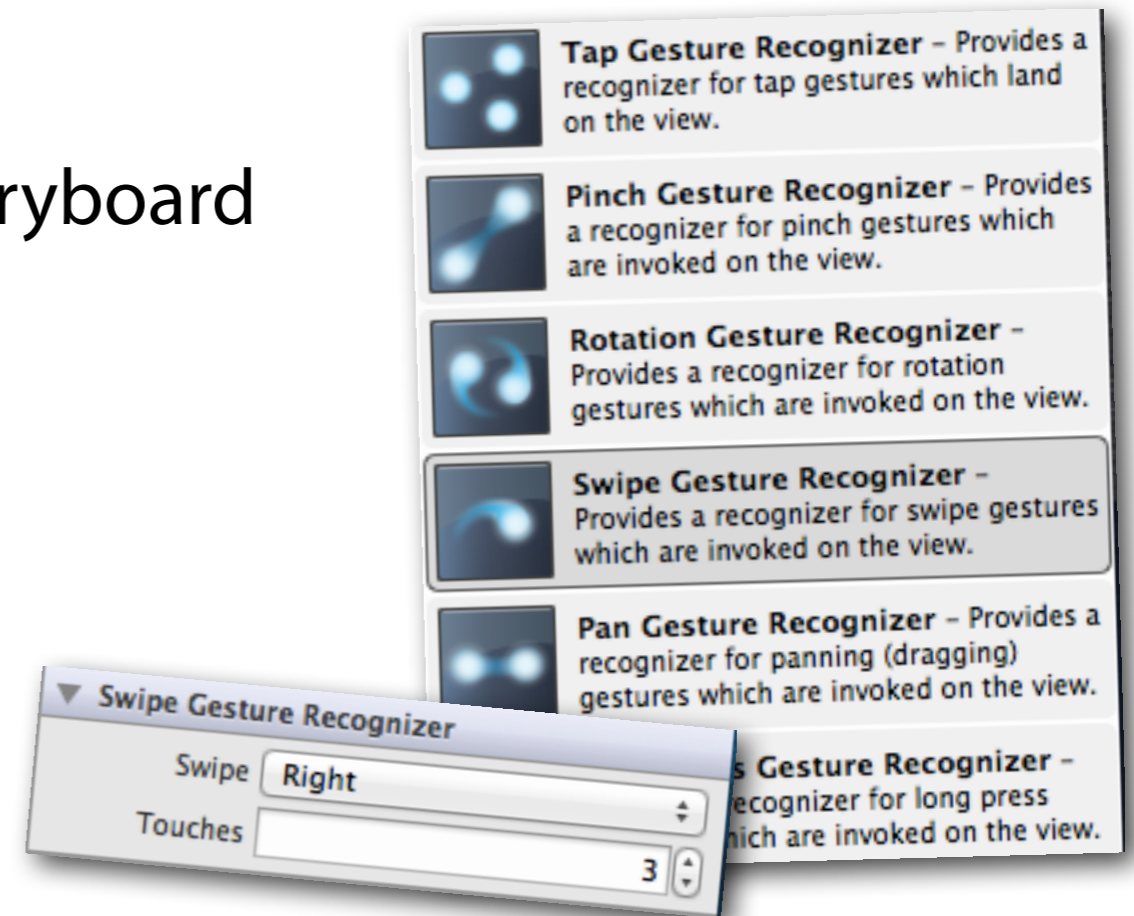
Accelerometer

- *g*-force values for x, y, z (1*g* = 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):

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

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

- Get location data via Delegate method:

```objc
- (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 are animatable:

  - `@property frame`

  - `@property bounds`

  - `@property center`

  - `@property transform`

  - `@property alpha`

  - `@property backgroundColor`

  - `@property contentStretch`
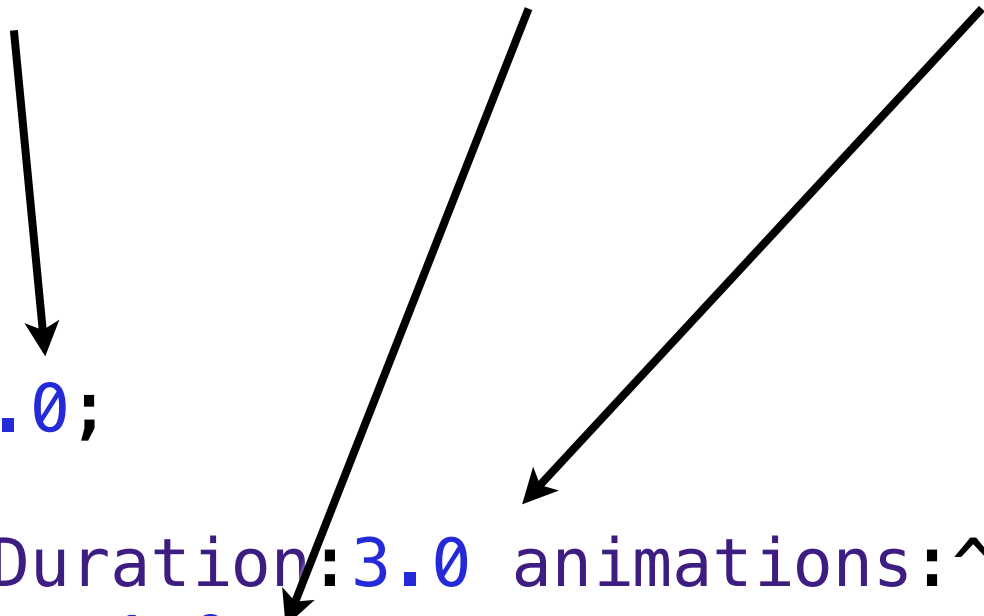
Example

TravelMate

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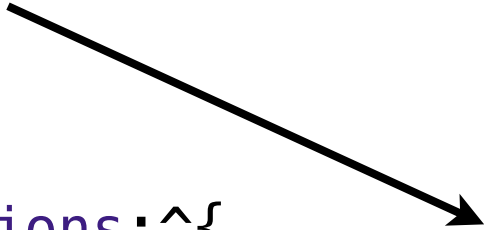
- This Block syntax makes your code easier to read. You don't have to memorize it - code completion is your friend :-)

Rotate

- Rotate by 90° in 3 seconds:

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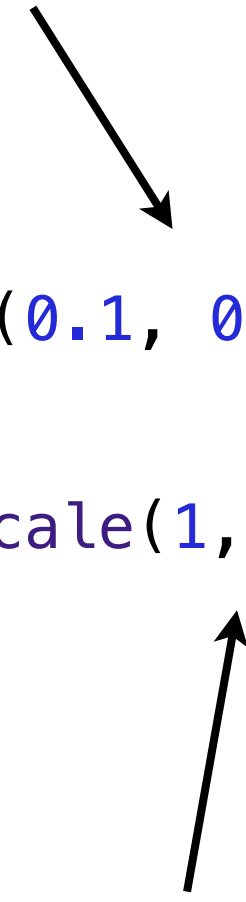
Scale

- 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);
}];
```
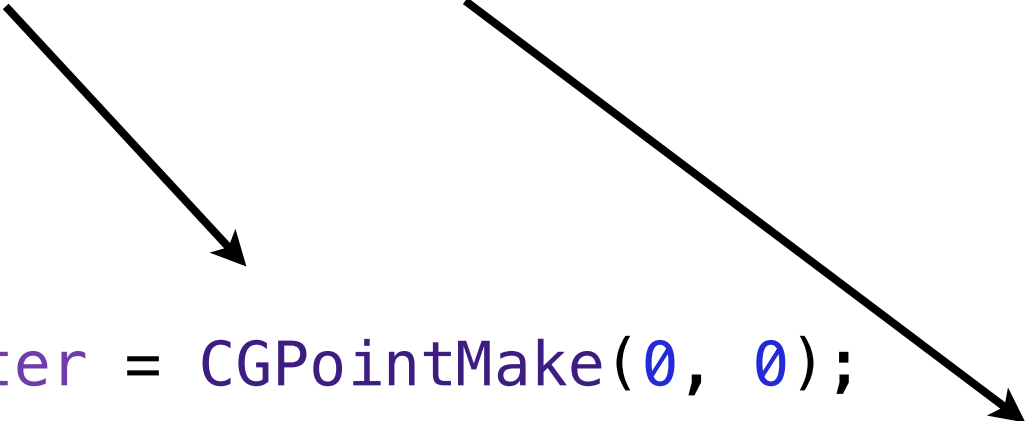
Move

- 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

    Uberfresh!

  - `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)
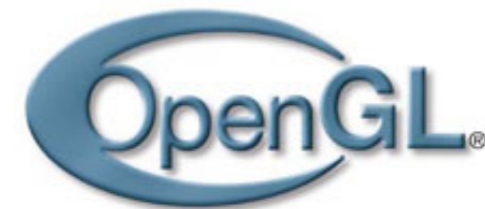
Assignment 3

- Do 2 out of 4 programming tasks
  (choose whichever interests you most)

- You can do this assignment in teams of two

- Due in two weeks (16.5. 12:00), upload to Uniworx

- For the project phase, form teams of four

Outlook

- **2.5. (today):** Assignment 3 is the last one

- **9.5. (next week):** Christi Himmelfahrt

- **16.5.:** Start of team projects

- **23.5. (14 pm - 17 pm!):** Present your app idea

- Questions?

- Problems with certificate request, provisioning profiles?