Praktikum Entwicklung von Mediensystemen mit iOS

Sommersemester 2013

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• 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
Today

• Assignment 2
• More iOS:
  • Text and touch input
  • Accelerometer
  • Animations and drawing
• Assignment 3
• Outlook
Assignment 2

iOS PEM - SS 2013
Text Input

- UITextField
- Requires UITextFieldDelegate
- Process text input:

```objective-c
// 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 $x$, $y$, $z$ ($1g = \text{normal acceleration caused by gravity}$)
- Access accelerometer by singleton object (requires Delegate)

```objective-c
[[UIAccelerometer sharedAccelerometer] setDelegate:self];
```
Accelerometer

• Get sensor data via Delegate method:

```c
- (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):**

```objective-c
#import <CoreLocation/CoreLocation.h>

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

- **Get location data via Delegate method:**

```objective-c
- (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

Spiel starten

Optionen

Highscores

TravelMate
Fade In / Out

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

```objective-c
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:

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

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

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

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

- Move from origin to center:

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

[UIView animateWithDuration:3.0 animations:^{
    imageView.center = imageViewSuperview.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:

```swift
@interface CustomShape : UIView

-(void)drawRect:(CGRect)rect {
    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?