HCIM Summer Workshop

Android Sensors

Eduardo Matos ematos@di.fc.ul.pt

1. Create a "hello world" app named AndroidSensors

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Figure 1 – Create a new app

Package Explorer 😂	0	New Android Application	- 🗆 🗙	
AndroidAnimation AndroidGPSTrack	New Android Applicat The prefix 'com.example	ion .' is meant as a placeholder and should not be used	\bigcirc	An outline is not available.
Eye Tracker List	Application Name:0	AndroidSensors		
Face Detection	Project Name:0	AndroidSensors		
FrequencyPaint Gesture Fun Open	Package Name:	com.example.androidsensors		
ImageSvitcherExat	Minimum Required SDK:0	API 8: Android 2.2 (Froyo)	-	
AultimodalGaller	Target SDK:0	API 17: Android 4.2 (Jelly Bean)	Y	
MultimodalList	Compile With:0	API 17: Android 4.2 (Jelly Bean)	*	
OpenCV Library - SensorMeter	Theme:0	Holo Light with Dark Action Bar	v I	
Simplelistmultime TIESAccelaromete TIESActivityWAcc TIESTouch VoiceRecognition	The application name	s shown in the Play Store, as well as in the Manage Applica	tion list in Settings.	
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Figure 2 - Create app

> Run as Android Application

2. Proximity Sensor

2.1. Add TextView on Layout

package explorer>res>layout>activity_main.xml>add the following textview

```
<TextView
android:id="@+id/prox"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@+id/textView1"
android:text="PROX: 0.0" />
```

2.2. Add these 3 parameters in your main class

TextView prox; SensorManager sensorManager; Sensor proxSensor;

2.3. Initialize parameters on the method onCreate

```
prox = (TextView) findViewById(R.id.prox);
sensorManager = (SensorManager) getSystemService(SENSOR_SERVICE);
proxSensor = sensorManager.getDefaultSensor(Sensor.TYPE_PROXIMITY);
```

2.4. Register/unregister Listener

Note: register/unregister sensors when not in use >source>override/implemented methods>onStop/onPause/onResume

sensorManager.unregisterListener(this);

2.5. Implements SensorEventListener

MainActivity **extends** Activity **implements** SensorEventListener{

- Add unimplemented methods
 - onSensorChanged
 - onAccuracyChanged

2.6. Receive data from Sensors

```
public void onSensorChanged(SensorEvent arg0) {
    if (arg0.sensor.getType() == Sensor.TYPE_PROXIMITY) {
        prox.setText("PROX: " + String.valueOf(arg0.values[0]));
     }
```

- }
- Run as Android Application
- 3. Accelerometer Sensor

```
3.1. Layout
```

```
<TextView
android:id="@+id/x"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@+id/prox"
android:text="X: 0.0" />
```

```
<TextView
android:id="@+id/y"
android:layout_width="wrap_content"
android:layout_height="wrap_content"
android:layout_below="@+id/x"
android:text="Y: 0.0" />
```

```
<TextView
android:id="@+id/z"
```

```
•••
```

```
3.2. TextView in MainActivity
```

```
Parameters: TextView x, y, z;
```

```
onCreate method:
```

x = (TextView) findViewById(R.id.x); y = (TextView) findViewById(R.id.y); z = (TextView) findViewById(R.id.z);

```
3.3. Sensors
```

Parameters: Sensor accSensor;

onCreate method:

```
accSensor = sensorManager.getDefaultSensor(Sensor.TYPE ACCELEROMETER);
```

register/unregister listener:

onSensorChanged method:

```
if (arg0.sensor.getType() == Sensor.TYPE_ACCELEROMETER) {
    x.setText("X: " + String.valueOf(arg0.values[0]));
    y.setText("Y: " + String.valueOf(arg0.values[1]));
```

z.setText("Z: " + String.valueOf(arg0.values[2]));

}

```
Run as Android Application
```

```
4. GPS
```

```
4.1. AndroidManifest.xml
```

<uses-permission android:name="android.permission.ACCESS FINE LOCATION" />

4.2. You need to download the class named GPSTracker.java and add it to your current package.

4.3. Initialise componentes in MainActivity

```
double longitude = gps.getLongitude();
```