Android Development

Final Assignment 2015

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Part 2 - Thumper Control

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Thumper RESTful Control

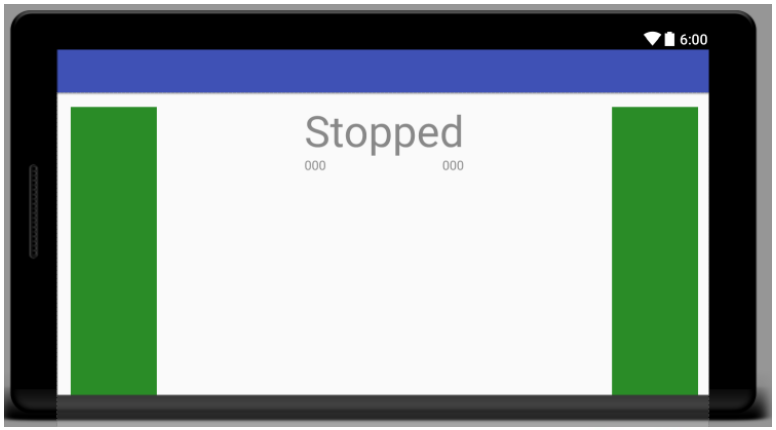
- The final assignment for the Android course consist of building an Android application which controls the 6WD Thumper available in the LAB
- The application should be able to control the NeoPixel LED-rings attached at the bottom exposed as a REST API
- The application should be able to control the TRex motor controller to make the Thumper move. It is also exposes using a REST API
- Basic requirements
  - User friendly
  - Good looking
  - Configurable
  - Error prone
    - Check all user input for errors

Thumper RESTful Control

Thumper Control Activity

- Create a separate activity to control the Thumper's movement
- Start from 'ManualControlActivity.java' as a base for the actual control
  - Can be found @ Toledo
  - Implements multi-touch control to drive the Thumper as it were a tank
  - Make sure to check out the REST API documentation
    - https://github.com/BioBoost/node_thumper_control
    - Make use of the Retrofit library to make requests to the REST API of the Thumper to control it's speed and direction

- Create a nice looking layout for the control activity
- My Example:
  - Not so nice looking !



Thumper RESTful Control

Thumper Control Activity

- The Thumper drive control has a timeout of 250ms
  - This means that when drive is initiated and no command is received for 250ms, the TRex controller is automatically shut down
  - This has been handled by using a Runnable object that is executed every x milliseconds
    - You task is to make it send the actual commands to the Thumper

- Make sure to display the voltage of the battery
  - See github docs (speed URI return battery_voltage)
  - Inherit from StatusReport ← ThumperStatusReport and add attribute battery_voltage
  - Fix code where needed
  - Add View to GUI and update after setting speed of Trex
  - Download latest node app from Github !

Thumper RESTful Control

- The application should be available in both Dutch and English
  - Full translation of values/strings.xml
  - So no hardcoded strings in code ANYWHERE !!

Some optional additions

- Can give you extra credits
- Pan and Tils for controlling the Thumper
  - Best to create separate activity for this
  - You can start from the example app @ Toledo
- NeoPixel effects while driving
- NeoPixel slider control
  - Sliders to control red, green and blue
- Battery warning
  - SMS, Alarm, Vibrate

Thumper RESTful Control

- Some reminders
  - Make sure your code is documented
  - Don't use hardcoded strings
  - Allow the user to configure the application
    - server IP and port
    - TRex timeout (now 250ms, may change later)
    - Battery alarm level (typically 6.8V)
    - …
  - Make the user interface nice and intuitive
  - Test the app thoroughly