

Interaction Technology and Techniques

Assignment 7: Activity Recognition with FFT

Summer semester 2014

Submission due: Sunday, June 22th, 2014, 23:55

Hand in in groups of max. two.

Your task is to implement an activity recognition system.

7: Activity Recognition with FFT

Write a small Python application `activity.py` that takes a Bluetooth MAC address as its only parameter. This application should turn your WiiMote into an activity recognition system with the following features:

- uses accelerometer (and optionally gyroscope) data
- detects at least three different activities
- some examples: running, sitting, walking, lying on couch, bicycling (please only test on stationary bike/ergometer), ...
- displays raw data as graphs + a text label indicating the currently recognized activity

Some hints:

- use a combination of FFT and moving average filters (= convolution with square signal) to filter the raw data
- document your code - add a block comment at the beginning which briefly describes the operation of your activity recognition system

Hand in the following file:

activity.py: a Python script that implements an activity recognition system

Points

- **1** The python script has been submitted, is not empty, and does not print out error messages.
- **2** The script correctly implements the features above.
- **2** The script accurately detects 3 or more different activities.
- **1** The script is well documented and uses reasonable choices for the activity recognition.
- **1** The script is well-structured and follows the Python style guide (PEP 8).

Submission

Submit via GRIPS until the deadline

All files should use UTF-8 encoding and Unix line breaks. Python files should use spaces instead of tabs.

Have Fun!