# Analysis of tri-axial accelerometer data of 4 month old infants

Student: Jerneja Mislej

University of Lund bif15jmi@student.lu.se

Project supervisor: Frida Renstrom

University of Lund Frida.Renstrom@med.lu.se

Assistant project supervisors: Paul W. Franks, Azra Kurbasic

University of Lund Paul.Franks@med.lu.se

Azra.Kurbasic@med.lu.se

#### **Abstract**

The main goal of the project is to extract physical activity levels from tri-axial accelerometer data, taken of 4 month old infants. Infants wore two accelerometers, one on the torso, other on the ankle, for 48 hours in a free living environment. In order to properly extract physical activity, the accelerometer data has to be prepared and preprocessed. Preparation includes data organization and timestamp alignment, while the preprocessing includes filtering, averaging, removal of data where the accelerometer was not worn, summary measure extraction, correction for gravity component and correction for acceleration contributed by the infants caretaker. Several approaches are discussed and presented along with the problems and negative features of each. The results from the correction of accelerations due to infant being moved are compared against the diary notations of infants sleeping and feeding habits, kept by their mothers. In the end, physical activity levels are extracted and analyzed along with other variables.

### BINP25 project • October 2016

| over all | mean of      | summary     | mean SD of be | eing moved blocks | variation of SD of being |          |  |  |
|----------|--------------|-------------|---------------|-------------------|--------------------------|----------|--|--|
|          |              | ,           |               |                   | moved blocks             |          |  |  |
|          | torso        | ankle       | torso         | ankle             | torso                    | ankle    |  |  |
| mean     | -2.362e-13 g | 2.099e-12 g | 0.0065 g      | 0.0131 g          | 0.0045 g                 | 0.0065 g |  |  |
| sd       | 0.0061 g     | 0.0112 g    | 0.0011 g      | 0.0020 g          | 0.0010 g                 | 0.0023 g |  |  |
| min      | -0.3132 g    | -0.3134 g   | 0.0044 g      | 0.0103 g          | 0.0033 g                 | 0.0040 g |  |  |
| max      | 0.3348 g     | 0.3551 g    | 0.0092 g      | 0.0183 g          | 0.0072 g                 | 0.0148 g |  |  |

### newline

average torso min of SD = 0.0013gaverage torso max of SD = 0.0237gaverage ankle min of SD = 0.0021gaverage ankle max of SD = 0.0338g

## References

## Supplements

Example of a diary kept by the infants mother.

Startdatum: 11/3 Kt. 10 Kt. 10

# Monitor Dagbok

| Anmärkningen gäller:   |  | Togs  | av:   | 8490778                       | Togs på ige                         |       |         |
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### Instruktioner:

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### Matdagbok

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### Kompletterande uppgifter

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