Data

They `Daten` are available for download: bbdc_2019_Bewegungsdaten_mit_referenz.zip (/images/2019/bbdc_2019_Bewegungsdaten_mit_referenz.zip) (file size approx. 330MB; unpacked approx. 2.3GB)

Updates:

- [06.05.2019] The data now contain the reference

Task

The Bremen Big Data Challenge 2019 is about classifying various everyday and sporty movements. Sensor data recorded on one leg above and below the knee are available for this. The training data set contains the data from 15 test subjects, four more are used to evaluate your solutions.

There are 22 movements in the data:

- Race (`run`).
- Go (`walk`).
- Stand (`stand`).
- Sitting (`sit`).
- Get up and sit down (`sit-to-stand` , `stand-to-sit`).
- Go up and down stairs (`stair-up` , `stair-down`).
- Jump on one or both legs (`jump-one-leg` , `jump-two-leg`).
- Run left or right curve (`curve-left-step` , `curve-right-step`).
- On the spot turning left or right, left or right foot first (`curve-left-spin-Lfirst` , `curve-left-spin-Rfirst` , `curve-right-spin-Lfirst` , `curve-right-spin-Rfirst`).
- Sideways steps left or right (`lateral-shuffle-left` , `lateral-shuffle-right`).
- Change of direction while running to the right or left, left or right foot first (`v-cut-left-Lfirst` , `v-cut-left-Rfirst` , `v-cut-right-Lfirst` , `v-cut-right-Rfirst`)

There are also other, possibly incorrectly labeled, movements in the data. Only the 22 listed movements are relevant for the abandonment of the BBDC 2019.

All data are available as CSV files (comma separated values). The first three lines of the training data (train.csv) look like this:

```
Subject, Datafile, Label
Subject02, Subject02 / Subject02_aufnahme000.csv, curve-left-step
Subject02, Subject02 / Subject02_Aufnahme001.csv, curve-left-step
Subject02, Subject02 / Subject02_Aufnahme002.csv, stand-to-sit
```

Each line corresponds to a recording of a movement. The columns have the following meanings:

- *Subject* : The subject's ID
- *Datafile* : Path of the file with the sensor data for this recording. For each subject there is a folder in which the sensor data for individual motion pictures are stored in individual files.
- *Label* : The movement that was recorded

The test data (challenge.csv) have the following format:

```
Subject, Datafile, Label
Subject01, Subject01 / Subject01_aufnahme000.csv, X
Subject01, Subject01 / Subject01_Aufnahme001.csv, X
Subject01, Subject01 / Subject01_Aufnahme002.csv, X
```
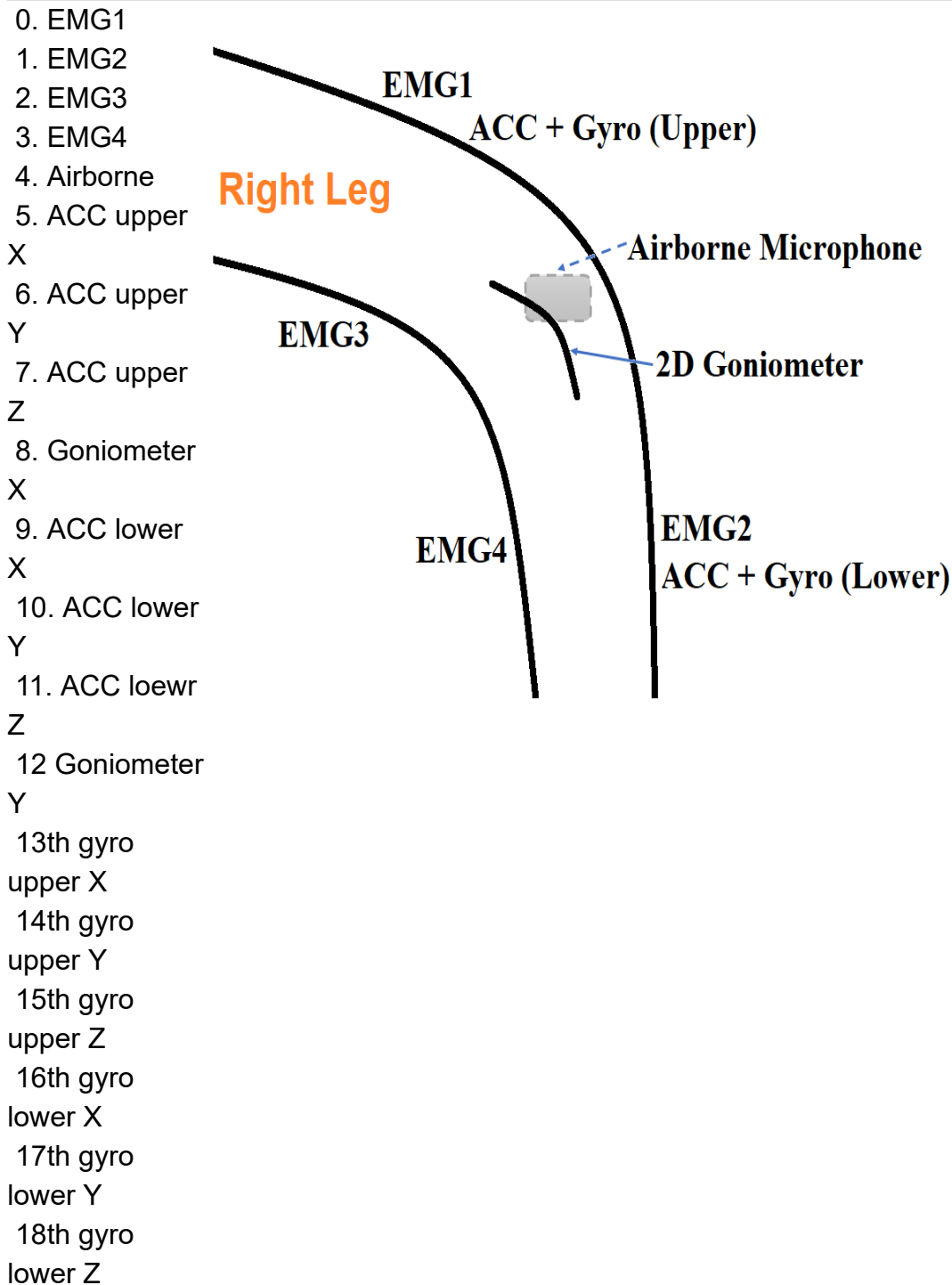
The columns have the same meaning as in train.csv. The column "Label" constantly contains the letter `X` to indicate that this value is not available. If you submit solutions, your submission should correspond exactly to the test data, each of which has been `X` replaced by a label. This label

corresponds to your classification result for this movement. It is important that the spelling (including capitalization) of the text labels matches the spelling of the labels in the training data exactly.

The data files look, for example, as follows (example: Subject02_aufnahme000.csv)

```
32688.32224.32991.32609.32790.33048.37168.34610.27374.29068.29264.28408.31784.28133.29295.292
32744.32571.32935.32279.32863.33048.37168 , 34610.27374.29068.29264.28408.31784.28133.29295.2
32788.32934.32767.32624.32899.33048.37168.34610.27374.29068.29264.28408.31784, 28133.29295.29
```

Each line stands for the sensor values measured at one point in time (scanned at 1000 Hz). The columns represent the individual sensors, the position of which is shown in the graphic:

0. EMG1
1. EMG2
2. EMG3
3. EMG4
4. Airborne
5. ACC upper X
6. ACC upper Y
7. ACC upper Z
8. Goniometer X
9. ACC lower X
10. ACC lower Y
11. ACC loewr Z
12 Goniometer Y
13th gyro upper X
14th gyro upper Y
15th gyro upper Z
16th gyro lower X
17th gyro lower Y
18th gyro lower Z

Each submission is evaluated using a score to determine the ranking of the participants. The higher the score, the better the submission rank. We use the detection rate as a score:

$$Accuracy = \frac{\#Labels_{korrekt}}{\#Labels_{insgesamt}}$$

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