

READ ME

This document describes the organization of the exemplary dataset (data acquired for one healthy young participant included in the study) included in the FigShare repository (10.15131/shef.data.19102619) linked to the manuscript entitled “*An algorithm for accurate marker-based gait event detection in healthy and pathological populations during complex motor tasks*”.

The 3D marker trajectories have been organized according to the convention adopted by The Mobilise-D consortium (<https://www.mobilise-d.eu/>). Please note that this document is focused only on the organization of stereophotogrammetric data; the overall organization of the complete dataset, where also the signals acquired from different measuring systems are included, will be presented elsewhere.

The exemplary dataset is organized as a Matlab structure file (.mat). For information on how to access and manage this format, please visit the Matlab help. The structure is hierarchical and accessible by the use of dots across the different levels and relevant field names (Figure 1).

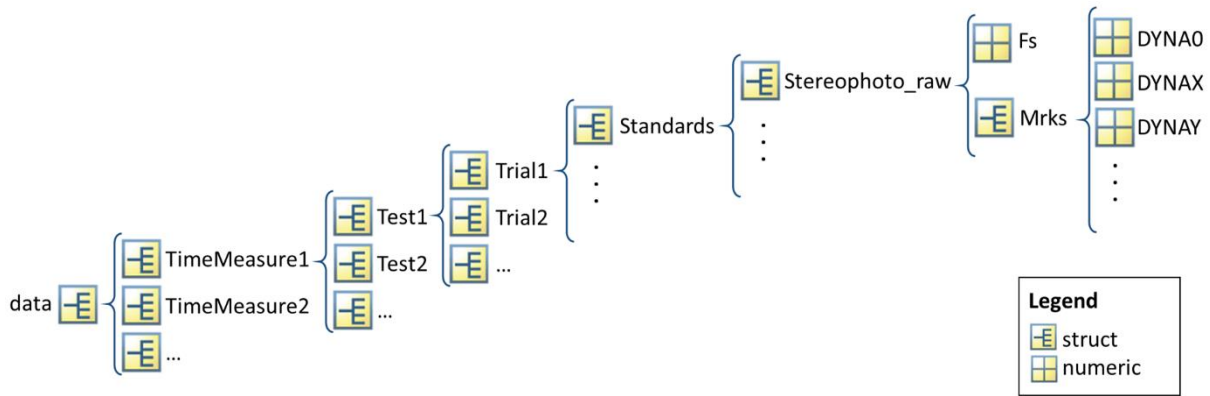


Figure 1. Organization of the provided Matlab structure.

The data.mat can have different “TimeMeasure”, “Test” and “Trial” that represent a given data acquisition, a specific test and its repetitions, respectively.

The provided data has a single “TimeMeasure” (i.e., TimeMeasure1) and different Tests (Test4, ..., Test10). These tests have the following convention:

- Test4 → Timed Up and Go (no repetitions, i.e., Trial1 only)
- Test 5 → Straight-line walking at a comfortable speed, repeated twice (Trial1, Trial2)
- Test 6 → Straight-line walking at a slow speed, repeated twice (Trial1, Trial2)
- Test 7 → Straight-line walking at a fast speed, repeated twice (Trial1, Trial2)
- Test8 → L-Test (no repetitions, i.e., Trial1 only)
- Test9 → Surface test (no repetitions, i.e., Trial1 only)
- Test10 → Hallway test (no repetitions, i.e., Trial1 only)

Please refer to the manuscript for a detailed description of the tests.

The names of the marker used in this protocol follow the description reported in Mazzà et al (2021). The 3D marker trajectories [mm] are ported in matrixes with three columns, where the third one represents the vertical component. For example, to access the marker trajectory of the right heel marker, the following string should be typed in Matlab:

```
data.TimeMeasure1.Test4.Trial1.Standards.Stereophoto_raw.Mrks.RHEEL
```

References

Mazzà, Claudia, Lisa Alcock, Kamiar Aminian, Clemens Becker, Stefano Bertuletti, Tecla Bonci, Philip Brown et al. "Technical validation of real-world monitoring of gait: a multicentric observational study." *BMJ open* 11, no. 12 (2021): e050785.