Datasets Overview

1 Gesture Phase Segmentation: gesture.py

Source:

```
!wget https://archive.ics.uci.edu/ml/machine-learning-databases/00302/gesture_phase_dataset.zip
```

1.1 Dataset Description

The data set "Gesture Phase Segmentation" is intended for the task of temporal segmentation of gestures, splitting video recordings into stages (phases) of performing a gesture.

1.2 Data Collection

The data was collected using a Microsoft Kinect sensor. Seven videos were recorded in which three different users narrated stories while gesturing. For each frame, the dataset provides an image with a timestamp and the (x, y, z) coordinates of six key points: left and right hands, left and right wrists, head, and spine.

Video name	a1	a2	a3	b1	b3	c1	c3
Number of frames	1747	1264	1834	1073	1423	1111	1448

Figure 1: Number of frames in each video of the dataset

1.3 Dataset Organization

The dataset consists of 14 files, where filenames contain a letter and a number:

- Letter (A, B, C) corresponds to a user.
- Number (1, 2, 3) corresponds to a story.

a1_raw.csv

No.	lhx	...	rwz	timestamp	phase
1	5.35	...	1.55	5702026	Rest
...	...	...	...	...	...
1747	5.01	...	1.59	5807537	Rest

a1_va3.csv

No.	1	...	32	Phase
1	5.35	...	1.55	D
...	...	...	...	...
1743	5.01	...	1.59	D

Figure 2: The structure of raw and va3 files

1.3.1 Raw Files

- 18 numerical attributes (key point coordinates)
- Timestamp
- Gesture phase label:
    1. Rest
    2. Preparation
    3. Stroke
    4. Hold
    5. Retraction

1.3.2 Processed Files

The dataset includes computed dynamics features (these are the files we use):

- Vectorial velocity (x, y, z) for left/right hands and wrists
- Vectorial acceleration (x, y, z) for left/right hands and wrists
- Scalar velocity for hands and wrists
- Gesture phase:
    - D - Rest position ("descanso")
    - P - Preparation
    - S - Stroke
    - H - Hold
    - R - Retraction

We read the 32 numerical features.

Target Variable: gesture phase.

Total number of training sequences: 113.

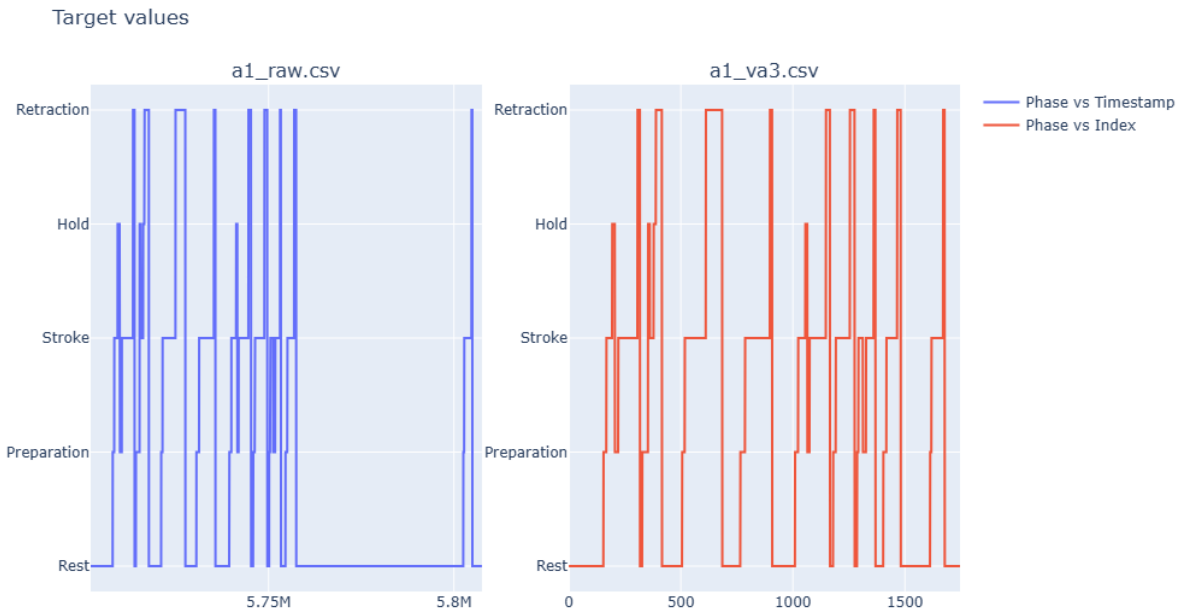

Figure 3: Target values

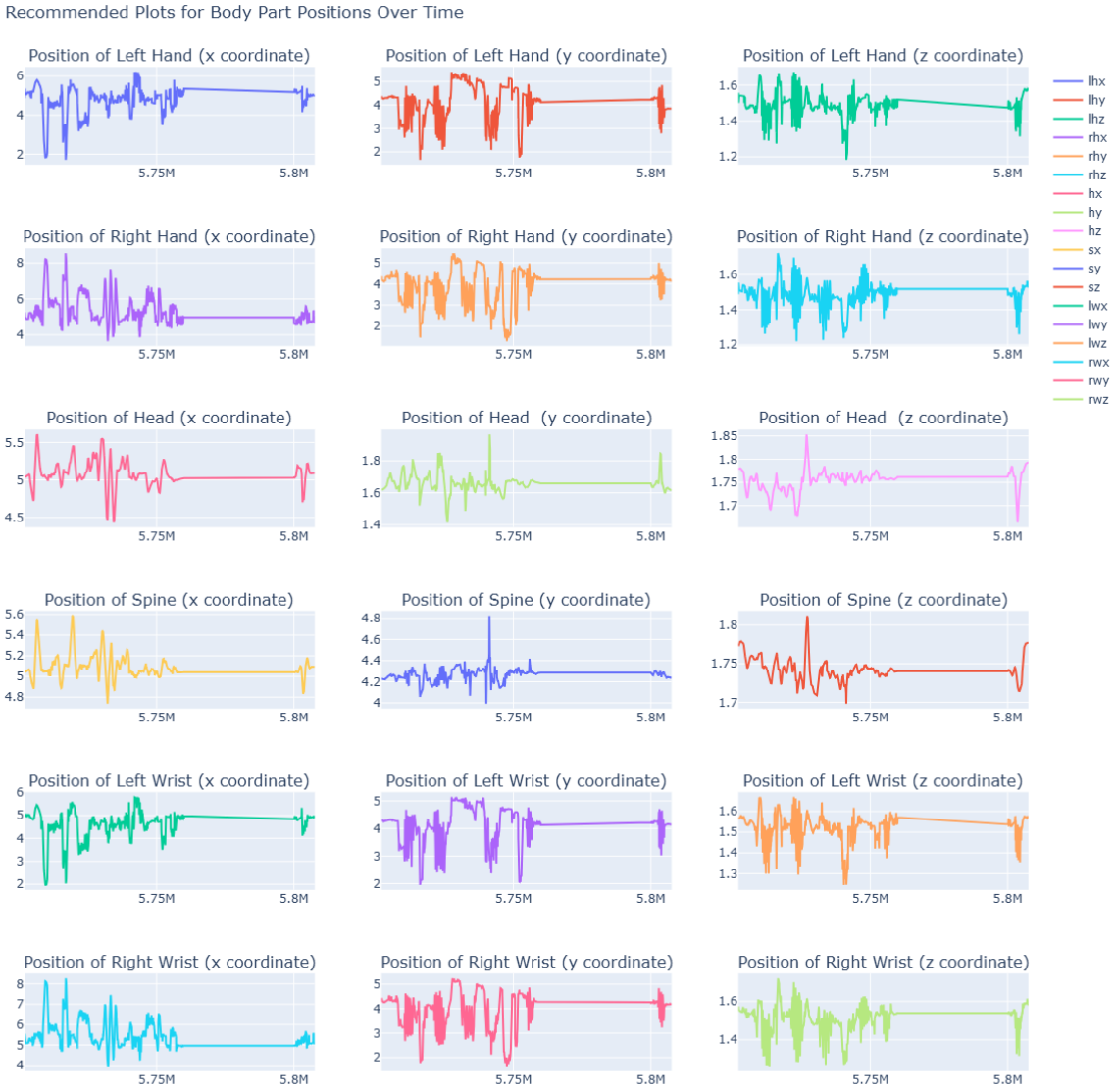

Figure 4: The visualization of a1_raw.csv data

Figure 5: The visualization of a1_va3.csv data