



Fig. 1: Cosine similarity among numerical text embeddings, normalized to  $[0, 1]$ .

Table 1: Descriptions of 29 gait parameters used in our study.

ID	Gait parameter description
1	Walking speed
2	Number of steps per minute
3	Difference in step duration between a left step and a right step
4	Difference in distance covered between a left step and a right step
5	Time difference between the left walk cycle and the right walk cycle
6	Time taken by the right step
7	Time taken by the left step
8	Distance covered by the right step
9	Distance covered by the left step
10	Time taken from the first contact of the left foot to the second contact of the left foot
11	Time taken from the first contact of the right foot to the second contact of the right foot
12	Distance covered by one left walk cycle
13	Distance covered by one right walk cycle
14	Vertical height covered from the heel point of left foot to the second contact of left foot
15	Vertical height covered from the heel point of right foot to the second contact of right foot
16	Percentage of the duration when the left foot is off the ground within one walk cycle
17	Percentage of the time when the right foot is off the ground within one walk cycle
18	Time when the left foot is off the ground within one walk cycle
19	Time when the right foot is off the ground within one walk cycle
20	Percentage of the duration when only the left foot contacts the ground within one walk cycle
21	Percentage of the duration when only the right foot contacts the ground within one walk cycle
22	Duration when only the left foot contacts the ground within one walk cycle
23	Duration when only the right foot contacts the ground within one walk cycle
24	Percentage of the duration when both feet contact the ground within left walk cycle
25	Percentage of the time when both feet contact the ground within right walk cycle
26	Duration when both feet contact the ground within left walk cycle
27	Duration when both feet contact the ground within right walk cycle
28	Angle between the progression line of left foot and the line from left heel to forefoot pressure center
29	Angle between the progression line of right foot and the line from right heel to forefoot pressure center

**Normal — 0**

Difference in distance covered between a left step and a right step is 0.03 leg,  
 angle between the progression line of left foot and the line from left heel to forefoot pressure center is 4.28 degree,  
 percentage of the duration when only the right foot contacts the ground within one walk cycle is 36.89 %,  
 time when the left foot is off the ground within one walk cycle is 0.43 sec.

**Slight — 1**

Difference in distance covered between a left step and a right step is 0.004 leg,  
 angle between the progression line of left foot and the line from left heel to forefoot pressure center is 4.28 degree,  
 duration when both feet contact the ground within left walk cycle is 0.38 sec,  
 time when the right foot is off the ground within one walk cycle is 0.33 sec,

**Mild — 2**

Difference in distance covered between a left step and a right step is 0.17 leg,  
 angle between the progression line of left foot and the line from left heel to forefoot pressure center is 17.73 degree,  
 walking speed is 0.29 leg/s,  
 time when the left foot is off the ground within one walk cycle is 0.34 sec.

**Moderate — 3**

Difference in distance covered between a left step and a right step is 0.08 leg,  
 angle between the progression line of right foot and the line from right heel to forefoot pressure center is -9.4 degree,  
 percentage of the duration when only the left foot contacts the ground within one walk cycle is 12.7 %,  
 time when the left foot is off the ground within one walk cycle is 0.33 sec.

(a) MDS-UPDRS gait scores.

**Healthy**

Difference in distance covered between a left step and a right step is 0.002 leg,  
 angle between the progression line of left foot and the line from left heel to forefoot pressure center is 4.28 degree,  
 duration when both feet contact the ground within left walk cycle is 0.38 sec,  
 time when the right foot is off the ground within one walk cycle is 0.39 sec.

**Dementia with Lewy Bodies (DLB)**

Difference in distance covered between a left step and a right step is 0.08 leg,  
 angle between the progression line of right foot and the line from right heel to forefoot pressure center is -1.35 degree,  
 percentage of the duration when only the left foot contacts the ground within one walk cycle is 32.40 %,  
 time when the left foot is off the ground within one walk cycle is 0.43 sec.

**Alzheimer's Disease (AD)**

Difference in distance covered between a left step and a right step is 0.002 leg,  
 angle between the progression line of left foot and the line from left heel to forefoot pressure center is 4.28 degree,  
 percentage of the duration when only the left foot contacts the ground within one walk cycle is 32.40 %,  
 time when the right foot is off the ground within one walk cycle is 0.39 sec.

(b) Diagnostic groups.

Fig. 2: Descriptions generated from per-class text features through the pretrained text decoder. Key criteria are highlighted in the respective class color.