Table 5. Extraction results of features from three-dimensional form.

Data	Feature 1	Feature 2	Feature 3		Feature 4	Feature 5	
			1. Average	2. Variance		1. Average	2. Variance
1	0.07	0.88	24.56	926.47	6270.00	1.35	0.27
2	0.26	−0.86	49.35	3835.76	101.20	1.63	0.37
3	0.26	−0.84	48.62	4238.26	812.71	1.29	0.51
4	0.15	−0.81	40.54	2151.77	0	1.37	1.09
5	0.15	0.93	23.87	834.82	0	1.61	0.31
6	0.17	0.99	38.96	1973.19	0	1.47	0.19

Results of features extraction are shown Table 5, and these results are graphed in Fig. 20.

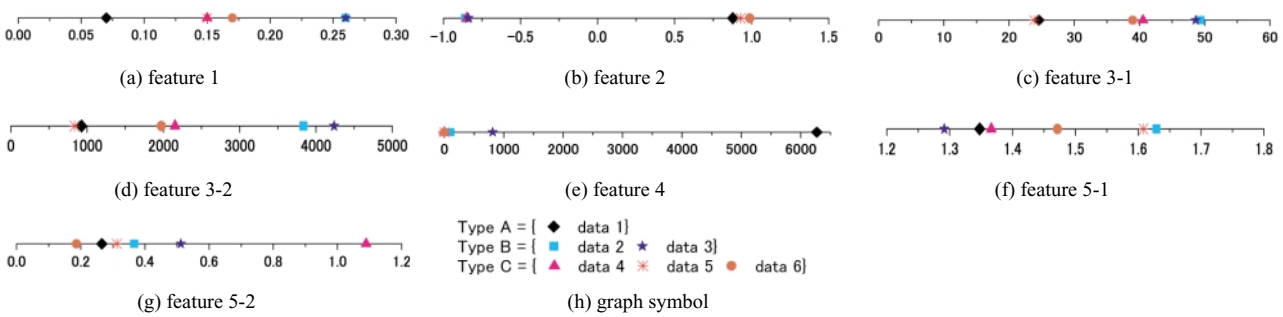

Fig. 20. Extraction results of features.

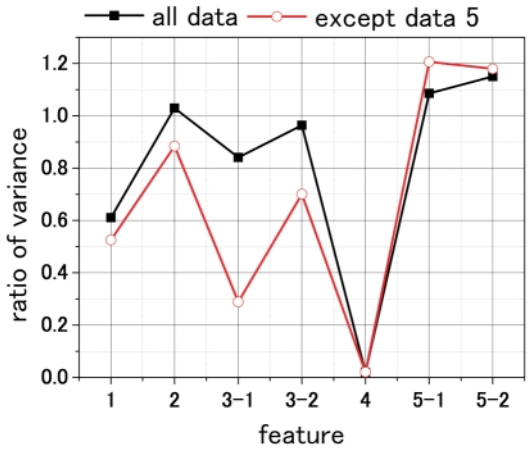

Fig. 21. Ratio of variation of data which is except data 1 to variance of all data (the red line is about all data except data 5) in each feature.

Table 6. Categorized result with each feature.

Feature	Same category as result using physiological response characteristics
1	NO
2	NO
3-1	YES (except data 5)
3-2	NO
4	YES
5-1	NO
5-2	NO

Each feature is categorized as feature which means shape or structure as like Eqs. (17) and (18).

$$F_{\text{form}} = \{f_1,\ f_2\} \tag{17}$$

$$F_{\text{structure}} = \{f_3,\ f_4,\ f_5\}. \tag{18}$$

In this paper, premotor neurons are comparing objectively using these features.

4. Experimental Results

The proposed method was applied to the cross sectional image series of premotor neurons as shown in Fig. 18. Figure 18 is obtained using CLSM. Figure 19 shows extraction results of main branch and all branches of right side using our interpolation method. Proposed features are obtained with the main branch and sub-branches which are on the main branch. Then in this experiment, we targeted the main branch and sub-branch; these branches make principal form of premotor neuron. All figures in Fig. 19 are visualized three-dimensionally using V-Cat which is software for three-dimensional visualization (RIKEN, 2004).

Proposed features are extracted from these three-dimensional form images. In Feature 5, threshold for identify of the LAL region is 80 which is Euclidean distance from origin. In this experiment, proposed features are estimated by classifying data into the category which is same with using physiological response result. Table 4 shows physiological response results of each data, and types in Table 4 are categorized based on (Mishima and Kanzaki, 1999).

Biologists focus attention on feature of shape in visual comparison. Hence, in Fig. 19, comparison results using Feature 2 which expresses shape are categorized {Type B}