

# Supplementary Material for Swallow-PPG: Photoplethysmography Templates for Comprehensive Temporal Analysis of Swallowing Anatomical Actions

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This supplementary document provides further details of the main paper. We describe the typical waveforms of templates under different  $K$  and the distribution of Template Unified Time Indicators (TUTIs) when  $K = 4$ . We hope that this document will complement our main paper.

their 95% CI on the templates of each category. The order of all the time indicators within each template is shown in Fig. 2. The timing of most time indicators is relatively consistent across the four categories.

## I. SWALLOWING TEMPLATES

We further discovered that these four template types persist across different number of clusters  $K$ . Using training set from the first fold as an example, we compared the correlation coefficients of templates obtained under different  $K$  with those derived when  $K = 4$ . Fig. 1 presents the templates with correlation coefficients exceeding 0.7 and cluster sizes of at least 15 samples. Overall, the listed templates are the derived forms of the four aforementioned templates. The numbers in Fig. 1 represent the cluster sizes corresponding to these templates above, which collectively constitute the majority of the total dataset. This indicates that the four template types and their derived forms are the predominant templates in the dataset.

## II. DISTRIBUTION OF TUTIS

We mapped the time indicators of the data in clusters onto the templates and take the average across sequences, obtaining the distribution of 28 mapped time indicators, i.e., TUTIs. Taking  $K = 4$  as an example, Fig. 2 shows the TUTIs and

This work was supported by the National Key R&D Program of China (2023YFC3603102), the "Pioneer" and "Leading Goose" R&D Program of Zhejiang (2024C03027), the National Natural Science Foundation of China (62306272), and the Science and Technology Program of Zhejiang Province (2024C03100). (*Corresponding author: Yun Pan.*)

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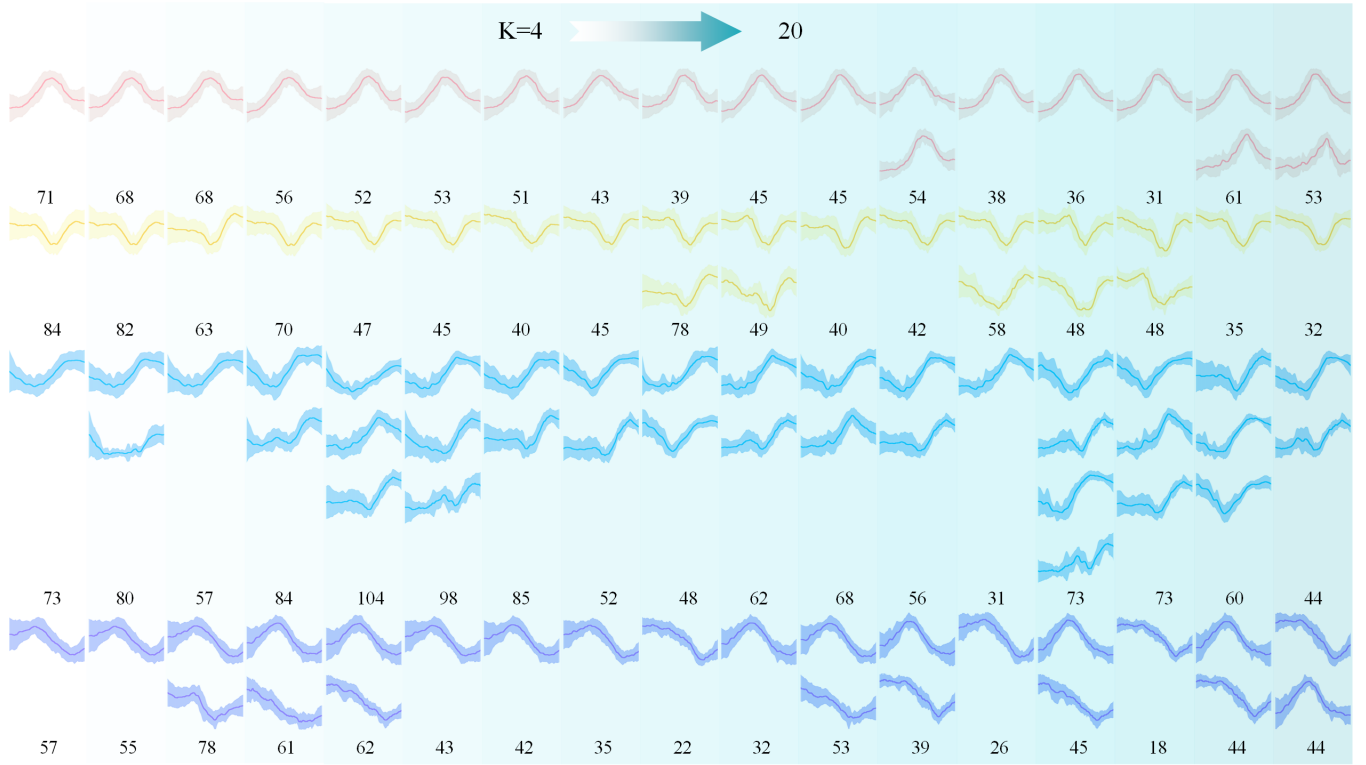


Fig. 1. The templates under different  $K$  in the first fold. Each template has a correlation coefficient more than 0.7 with one of the templates “Peak,” “Valley,” “Uphill,” and “Downhill.” And the numbers of data for these template generation are not less than 15. The numbers in the figure is the quantity of data for the templates above.

