

Supplementary Material

ALPINE: Improving Remote Heart Rate Estimation using Contrastive Learning

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1. Effect of number and choice of the ROIs used for rPPG estimation

We have fixed the ROIs to 4, for the proposed method. We performed ablation studies by varying the number of ROIs; please refer to Table 1. Since we apply Contrastive Learning (CL), we require at least two regions. We initially started with two ROIs (*left cheek* and *right cheek*) and subsequently increased the ROIs by adding *forehead*, *nose*, and *mouth* regions. We observe the performance saturates for 4 selected ROIs, and thereafter performance degrades as other ROIs are susceptible to noise. If we include both stable and unstable ROIs, the performance degrades (refer to Table 1, row (*Stable, Unstable*)). Furthermore, if we exclude our chosen ROIs from (*Stable, Unstable*), that is, if we use unstable regions only, the performance further degrades (refer to Table 1, row (*Unstable*)). Hence, we have selected unconnected face regions to define our ROIs, wherein overlapping ROIs cannot be selected. Also, we avoid a large number of face regions because it decreases the ROI size, and smaller ROIs are susceptible to noise, leading to performance degradation.

Table 1. Performance analysis of ALPINE with varying numbers and choice of the ROIs, for rPPG estimation. All the values are in BPM and all the metrics represent better performance if they have lower values. The values in **bold** show the results on the actual number of ROIs used.

ROIs	UBFC-rPPG			COHFACE		
	SD	MAE	RMSE	SD	MAE	RMSE
2	4.16	3.82	4.93	5.47	4.78	6.10
3	3.85	3.10	4.52	5.03	4.14	5.64
4	3.17	2.58	4.01	4.46	3.65	5.07
5	3.82	3.48	4.71	5.22	4.36	5.83
(<i>Stable, Unstable</i>)	5.81	4.89	5.94	7.42	6.35	7.12
(<i>Unstable</i>)	8.25	7.58	8.72	10.42	9.68	10.92