EfficientPhys: Enabling Simple, Fast and Accurate Camera-Based Cardiac Measurement

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1. Additional Results

We further evaluated our proposed models on the MAHNOB-HCI dataset [4] and compared against other state-of-the-art on-device methods in Table 1. The MAHNOB-HCI dataset contains 527 videos in total with 27 subjects (12 males and 15 females). The ground truth heart rate were computed on the provided ECG waveform, and the sampling rate is 61hz. To calculate the heart rate from estimated facial PPG, we applied a band-pass filter to the signal with a cutoff frequency of 0.75 and 2Hz (45 beats/minute to 120 beats/minute) and then used FFT to calculate corresponding heart rates. As Table 1 illustrates, EfficientPhys-C achives the best performance across six different on-device methods. Unfortunately, the results of POS are not available on previous literature.

Table 1. Cross-dataset heart rate evaluation on MAHNOB-HCI (beats per minute).

	MAHNOB-HCI [4]			
Method	MAE↓	MAPE↓	RMSE↓	ρ ↑
EfficientPhys-C	6.16	8.39%	8.71	0.69
EfficientPhys-T1	11.67	16.25%	14.89	0.01
EfficientPhys-T2	11.34	15.91%	14.15	0.09
TS-CAN[2]	7.47	10.13%	10.75	0.50
POS[5]	NA	NA	NA	NA
CHROM[1]	13.49	NA	22.36	0.21
ICA[3]	NA	NA	13.60	0.36

MAE = Mean Absolute Error in HR estimation, MAPE = Mean Absolute Error Percentage in HR estimation, RMSE = Root Mean Square Error in HR estimation, ρ = Pearson Correlation in HR estimation.

References

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