# VIPL-HR: A Multi-modal Database for Pulse Estimation from Less-constrained Face Video

中科院计算所

Xuesong Niu, Hu Han, Shiguang Shan and Xilin Chen

**Institute of Computing Technology, Chinese Academy of Sciences**

xuesong.niu@vipl.ict.ac.cn, {hanhu, sgshan, xlchen}@ict.ac.cn

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## Problem

- **Remote Heart Rate Estimation from Face Video**


- **Most of existing approaches only provide evaluations on private databases, leading to difficulties in comparing different methods.**
- **Existing public-domain HR databases are in small size, and usually captured in a well-controlled scenarios, and thus do not well replicate the real application scenarios, e.g., with motion, pose and illumination variations.**

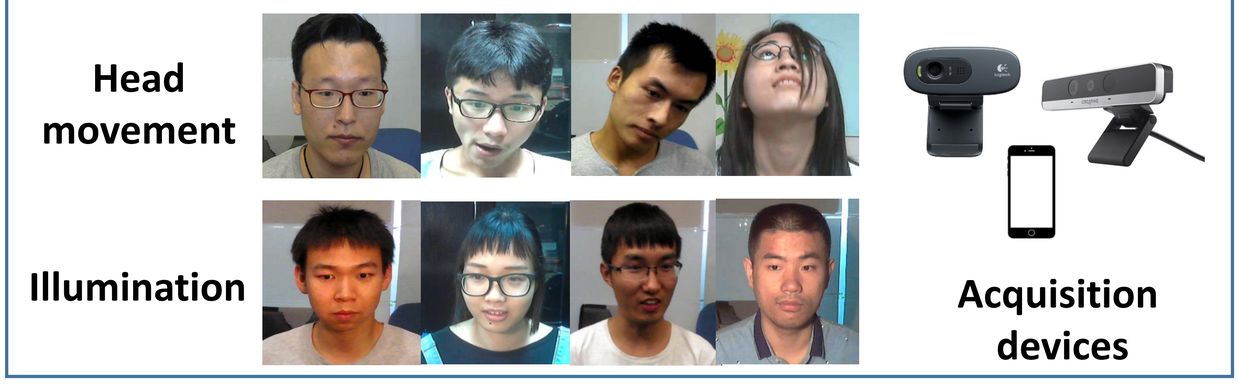
**A large less-constrained HR database is needed!**

## VIPL-HR Database Overview

- **107 subjects, 2,378 color videos and 752 NIR videos, 30s per video.**
- **9 situations for each subject, including 3 different motion conditions, 3 different illumination condition recorded by 3 different acquisition devices.**

**Download**

**http://vipl.ict.ac.cn/view_database.php?id=15**



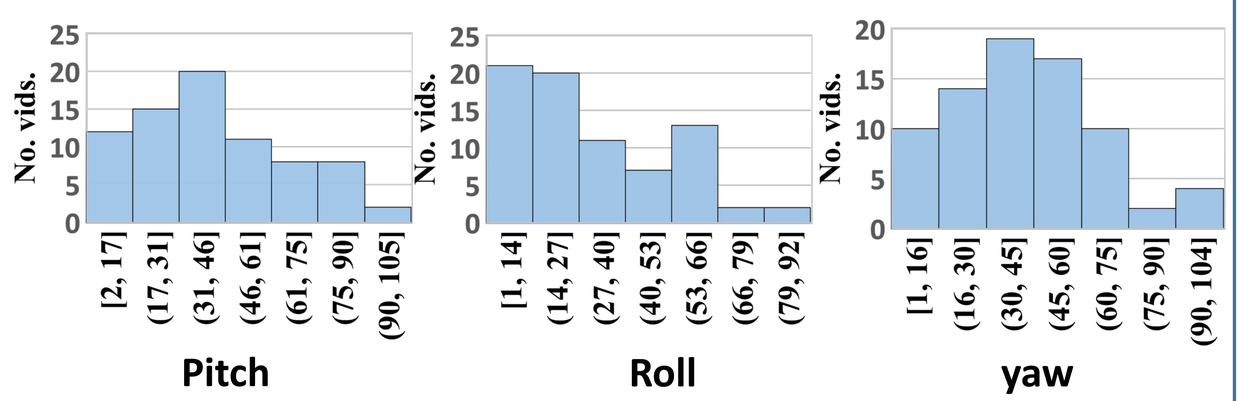

## Database Details

- **Detailed statistics of VIPL-HR**

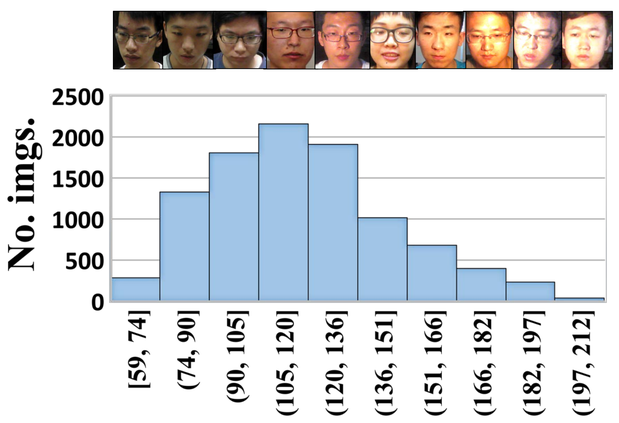
| Scenario | Head movement | Illumination | Distance | Exercise | Phone recording method |
|---|---|---|---|---|---|
| 1 | S | L | 1m | No | Fixed |
| 2 | LM | L | 1m | No | Fixed |
| 3 | T | L | 1m | No | Fixed |
| 4 | S | B | 1m | No | Fixed |
| 5 | S | D | 1m | No | Fixed |
| 6 | S | L | 1.5m | No | Fixed |
| 7 | S | L | 1m | Yes | Fixed |
| 8 | S | L | - | No | Handheld |
| 9 | LM | L | - | No | Handheld |

S = Stable, LM = Large Motion, T = Talking,
L = Lab Environment, D = Dark Environment, B = Bright Environment

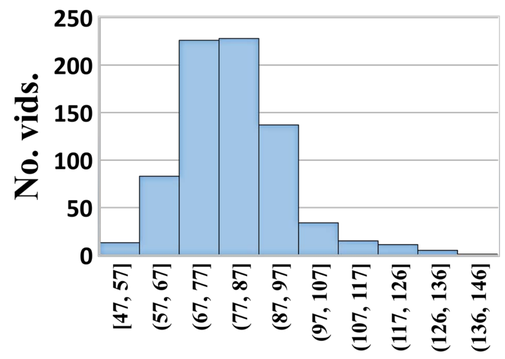
- **Head pose variations (max rotation amplitudes)**




- **illumination variation**

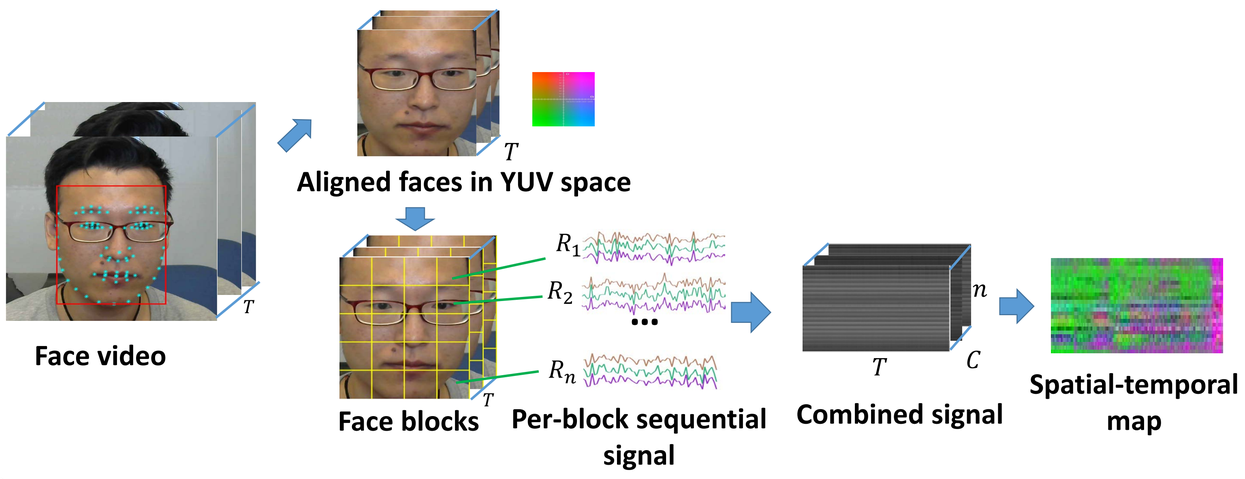



- **Ground-truth HR distribution**

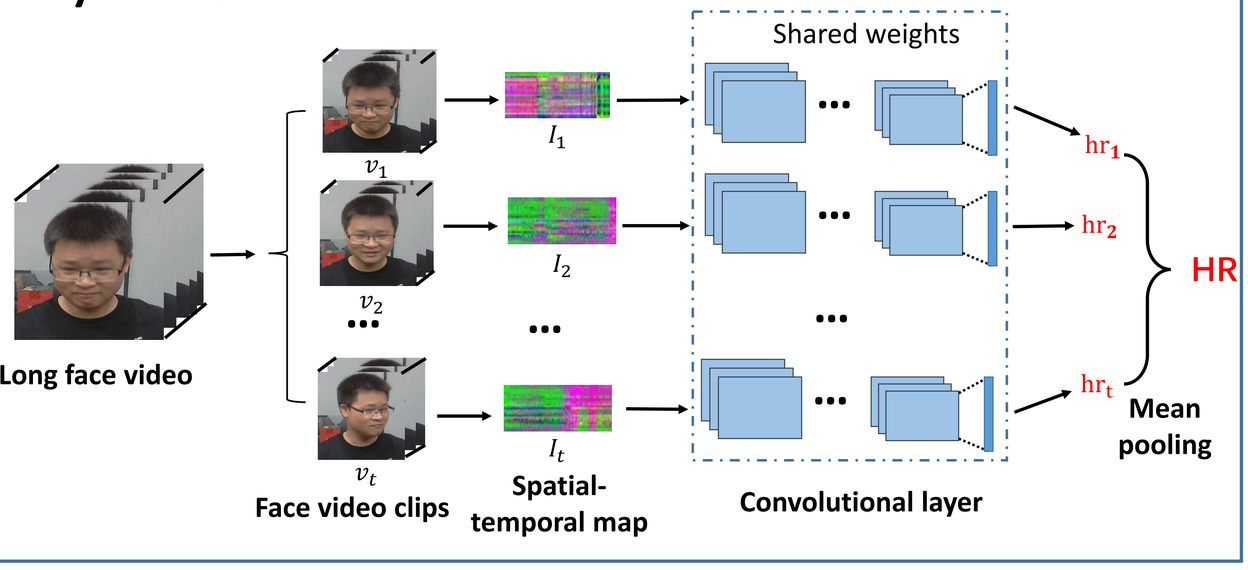



## Proposed Approach

- **Spatial-temporal map**

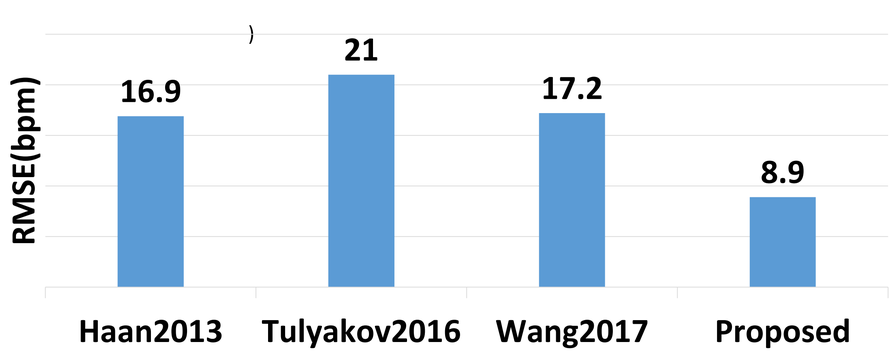



- **RhythmNet**




## Results

- **Within-database testing (5-fold subject-exclusive protocol on color videos of VIPL-HR)**




- **Cross-database testing (trained on VIPL-HR color videos, test on MMSE-HR)**