Technical Aspects:

Compatible with available low-cost resource constraint edge platforms and cameras
Appropriate settings to capture PPG from the subjects
Facilitate off-line and real-time operations, and stable rPPG system
Development of robust model to extract PPG

1. **Technical Aspects:**
   - Appropriate settings to capture PPG from the subjects
   - Facility offline and real-time operations, and stable rPPG system
   - Development of robust model to extract PPG

2. **Scientific Aspects:**
   - Development of robust model to extract PPG
   - Effectively scaling down the model for resource-efficient operation inside edge devices

**Methodology**

- Collection of rPPG dataset
  - Camera variations
  - Subject variations
  - Environment variations
- Train Deep-Learning based model to infer rPPG from raw video data
- Compress the model (Pruning, quantization)
- Prepare Edge Compatible format.
- Pipeline the rPPG system inside Edge device

**Experiment and Results**

- **Experimental Dataset**
  - UBFC-rPPG
  - MERL-rPPG
  - MPSC-rPPG

- **Device Compatibility**
  - Jetson Nano
  - Raspberry Pi
  - Google Coral Dev-Board

- **Metrics**
  - rPPG accuracy
  - System parameters
  - Memory Occupancy
  - Power Consumption

**Summary and Conclusion**

- We develop edge compatible rPPG devices for ubiquitous HR monitoring.
- We develop robust rPPG detection model utilizing Deep learning based data-driven model.
- We propose rPPG domain specific pruning to scale down computational heavy deep learning model.
- We test our approach on two publicly available dataset and our own-collected MPSC dataset.
- We test the system performance under varying conditions like camera movements, lighting variations, fps variations.
- We thoroughly test our system stability for time, power, memory performance and benchmark our system.
- We open-source our dataset and codes to facilitate further research.

**References and Publications**


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