

# Hierarchical Multi-Label Framework for Robust Face Recognition

Lingfeng Zhang, Pengfei Dou, Shishir K. Shah and Ioannis A. Kakadiaris

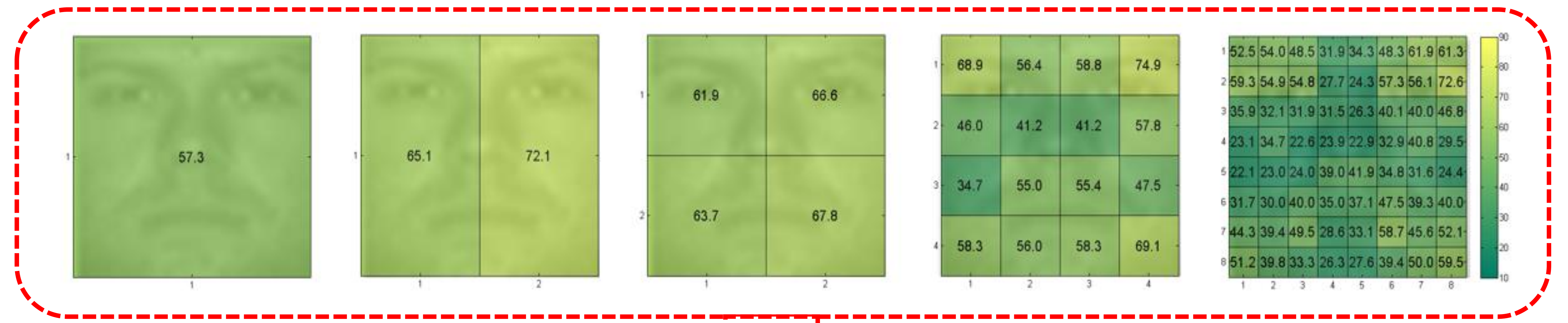
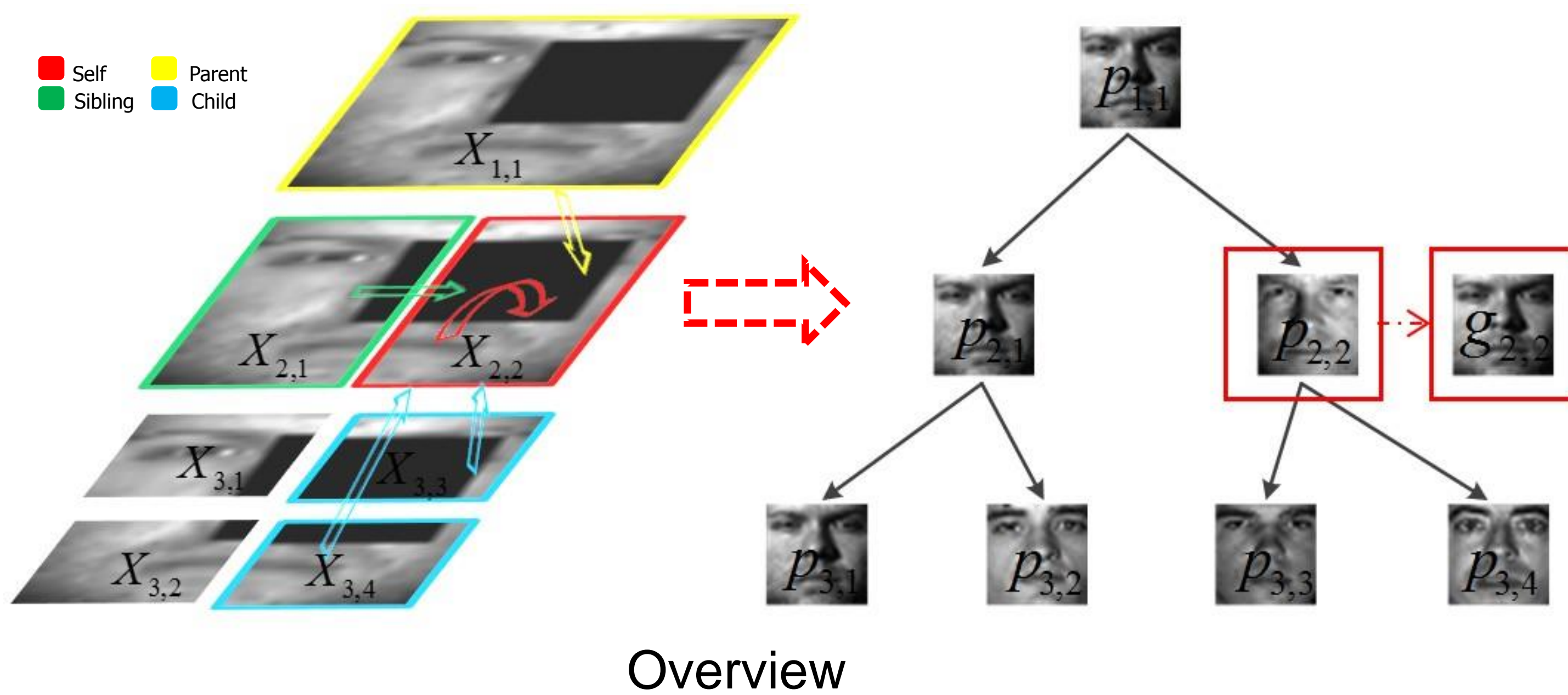
Computational Biomedicine Lab, University of Houston, Houston TX

## Key intuition

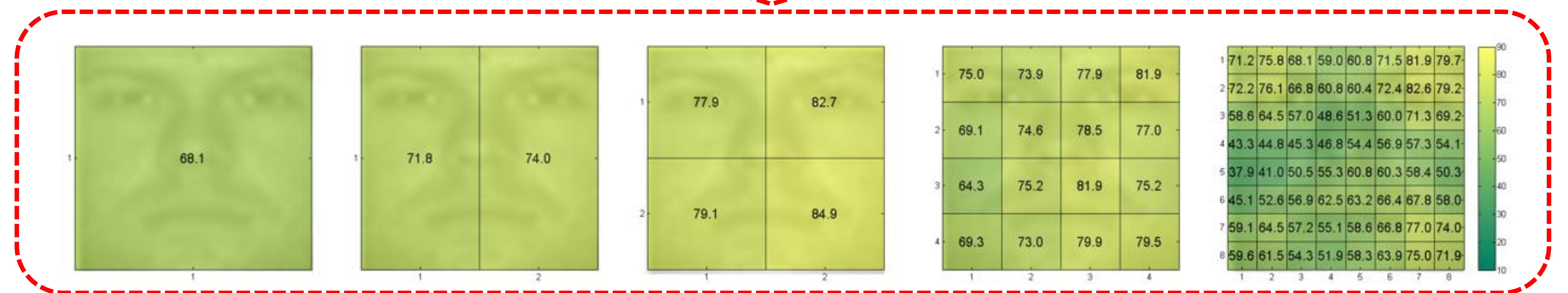
## Illustration

### A. Motivation

- Exploiting correlations between hierarchically related patches
- Drawbacks of previous local approaches:
  - Sensitive to patch size



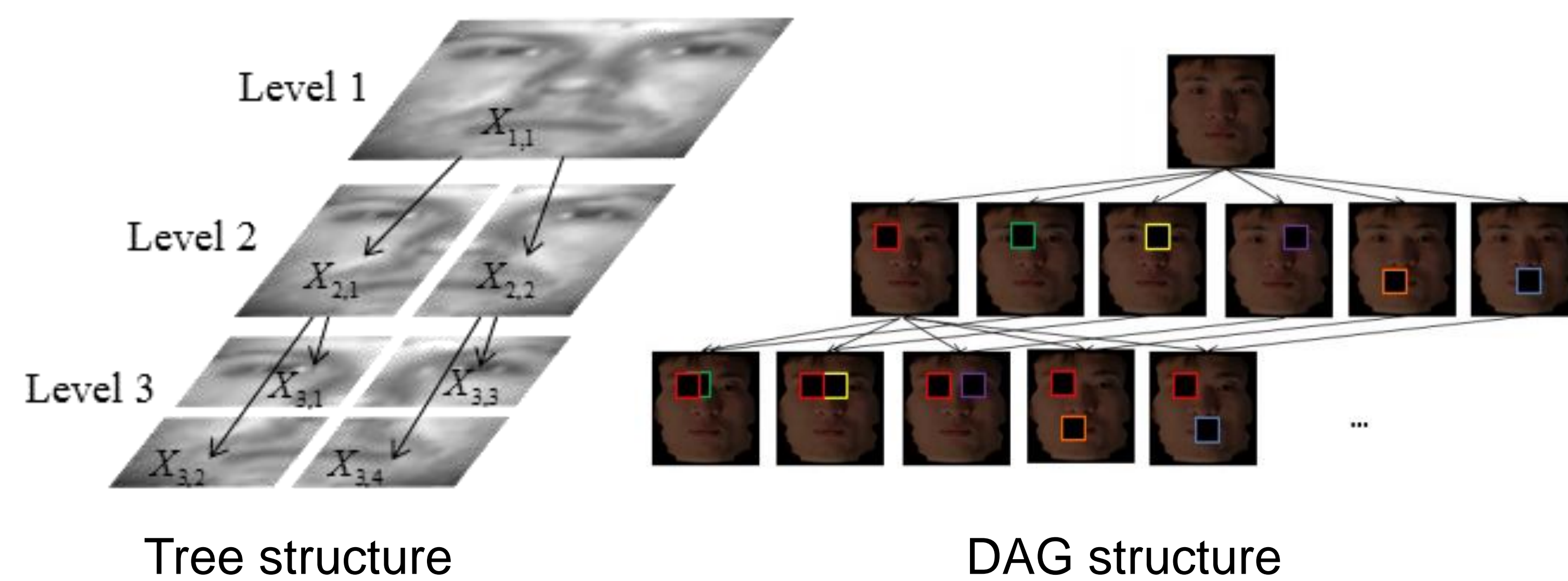
HML



Local prediction + HML = Global prediction

## Methods

### A. Hierarchical multi-label framework (HML)

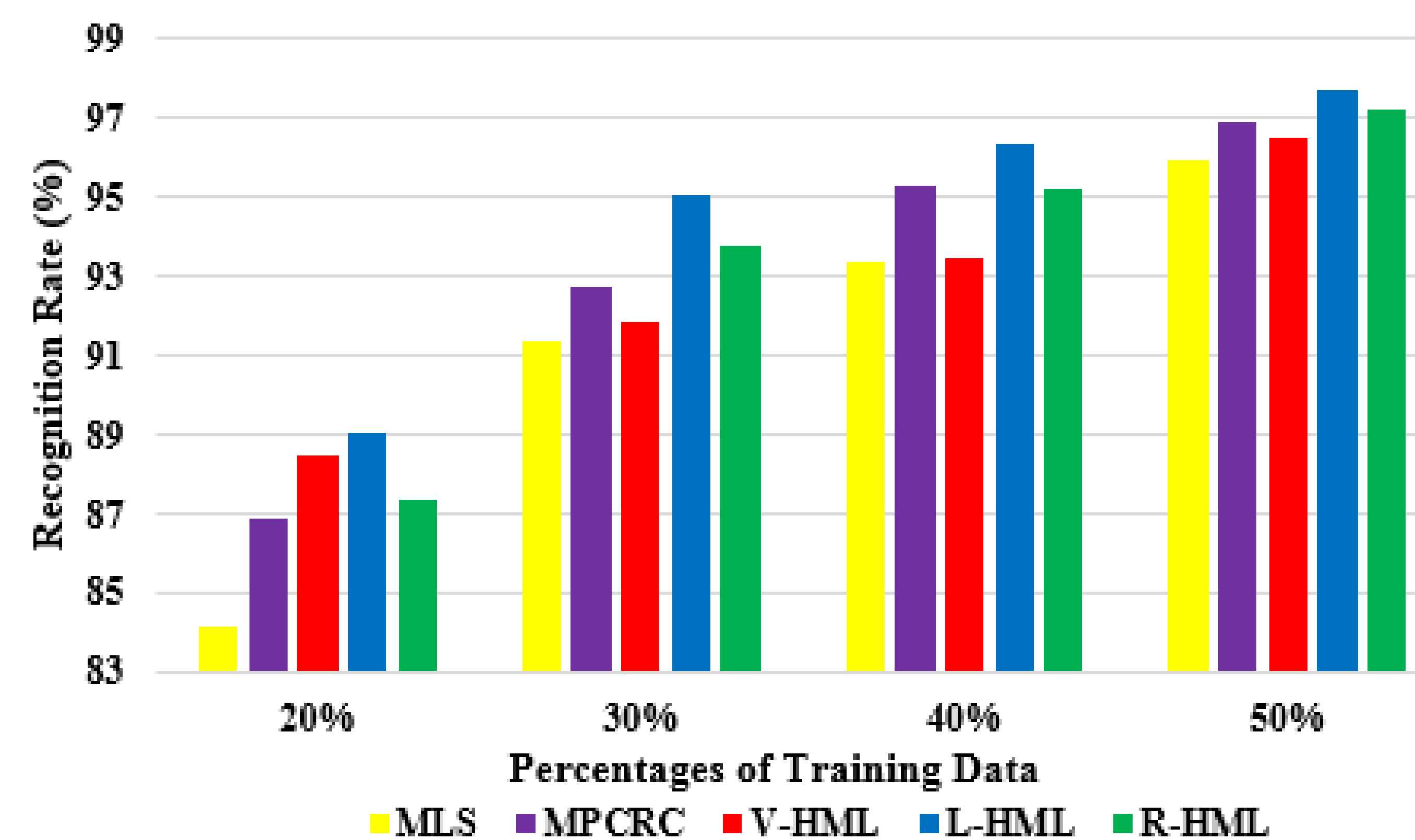


### B. Local prediction to global prediction

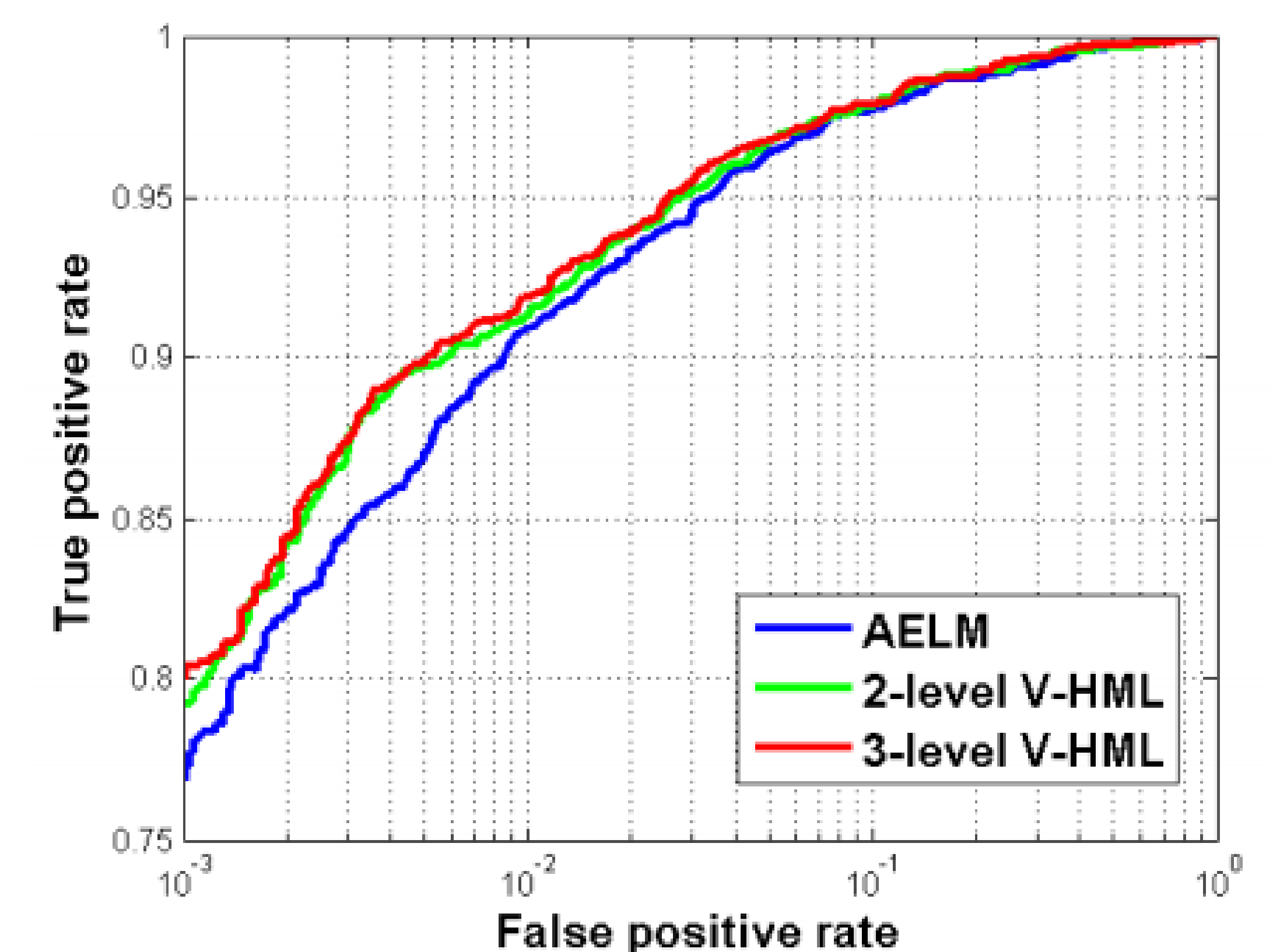
- Majority voting (V-HML)
- L1-regularized weighting (W-HML)
- Decision rule (R-HML)

## Results

The performance on the AR database



The performance on the UHDB11 database



**Acknowledgments:** This research was funded in part by the US Army Research Lab (W911NF-13-1-0127) and the UH Hugh Roy and Lillie Cranz Cullen Endowment Fund.

