Head Pose Recommendation for Taking Good Selfies

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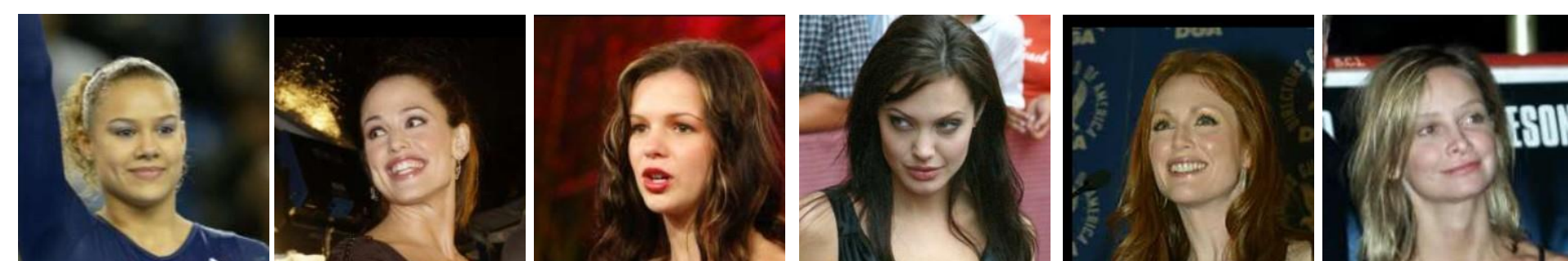## How to take well-posed selfies?

- ☐ A data mining approach
- ☐ Utilizing voluminous popular profile images from Facebook
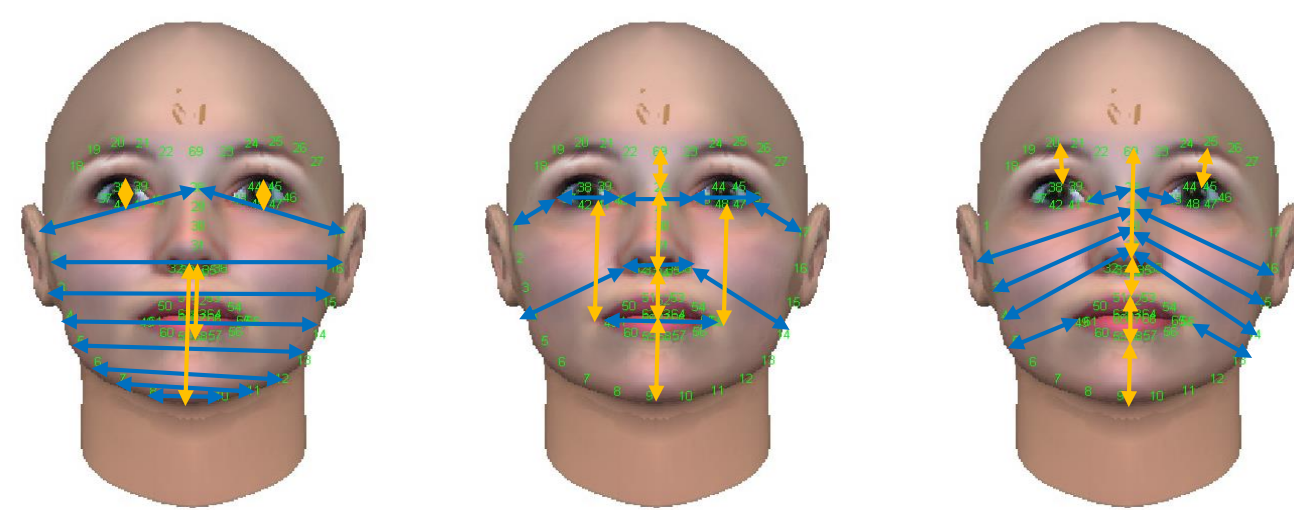
DATASETS

- ☐ Facebook beauty (6,785)

- ☐ Labeled faces in the wild (12, 973)

The principal difference lies in head pose!
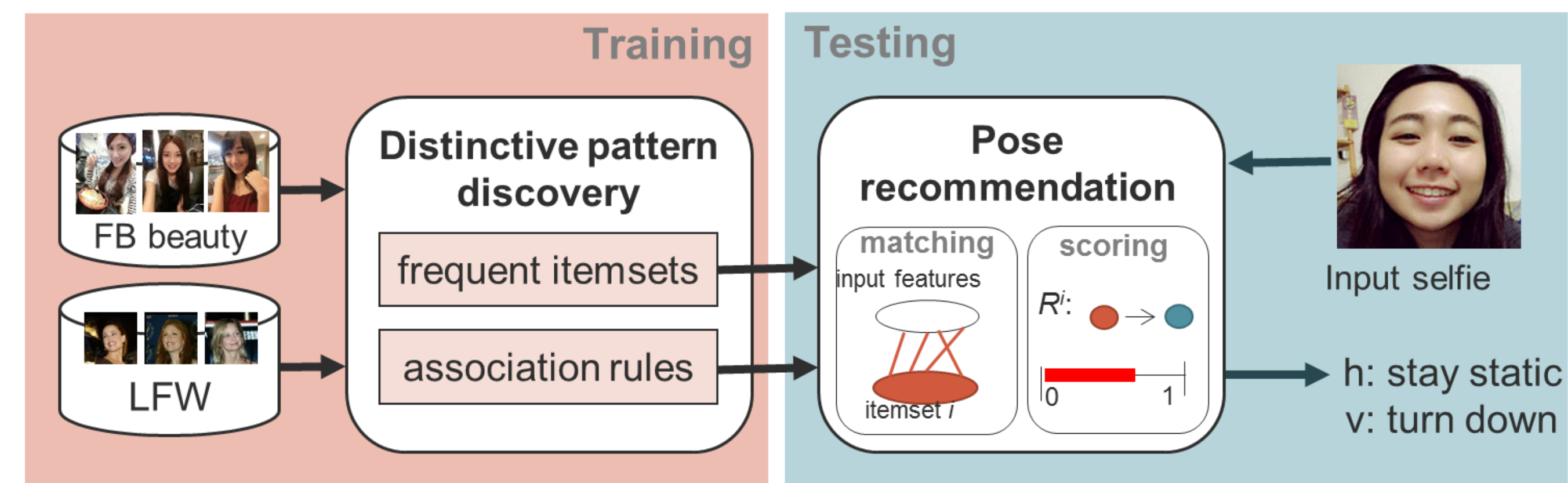
PATTERN FORMATION

- ☐ Design 45 line features

The relationship between pose changes and the features is known!

- ☐ Quantized into 9 bins
- ☐ A face image has 45 items; each is indexed by one of the possible 405 (45*9) items.

FRAMEWORK

POSE-WISE PATTERN MINING

- ☐ Performing pose clustering

- ☐ Formulating an association rule learning problem

  Transaction ~ Selfie

  Items ~ Quantized line features

- ☐ Mining frequent itemsets and association rules for each pose cluster using the Apriori algorithm

$$conf(P \rightarrow \text{beauty}) > conf_{min}$$
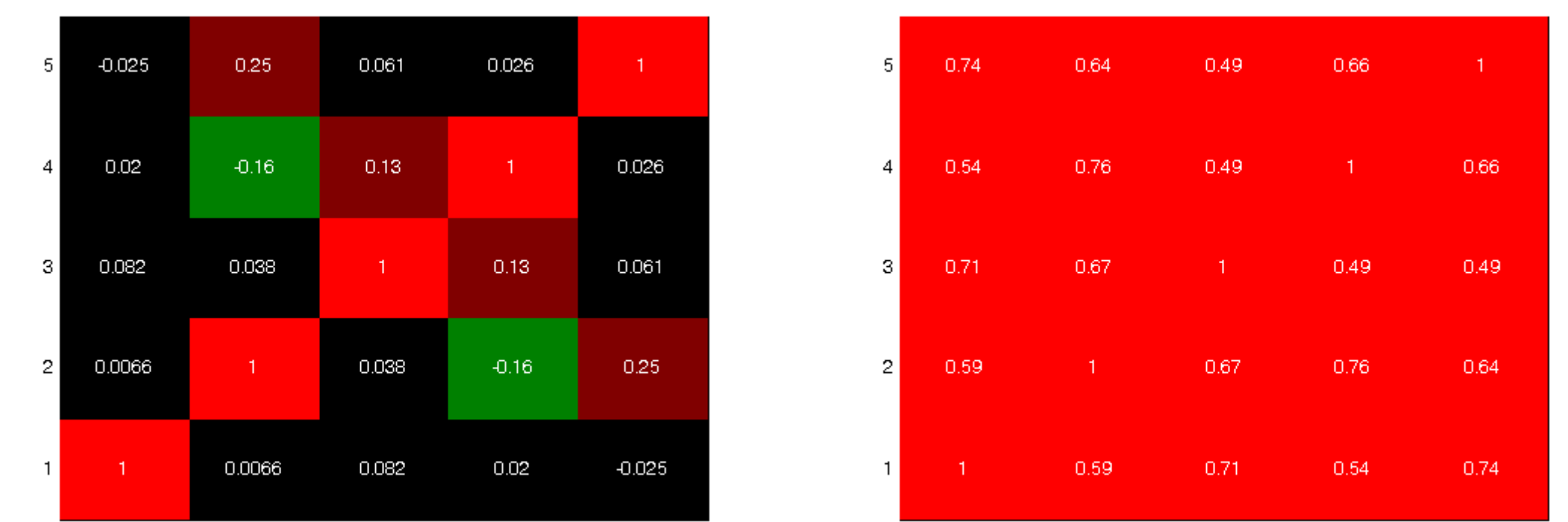
POSE RECOMMENDATION

- ☐ Let $P_L \Rightarrow P_R$ denote a mined association rule.
- ☐ Using two criteria: (1) the itemset size and (2) the degree of matching between the itemset and the image.

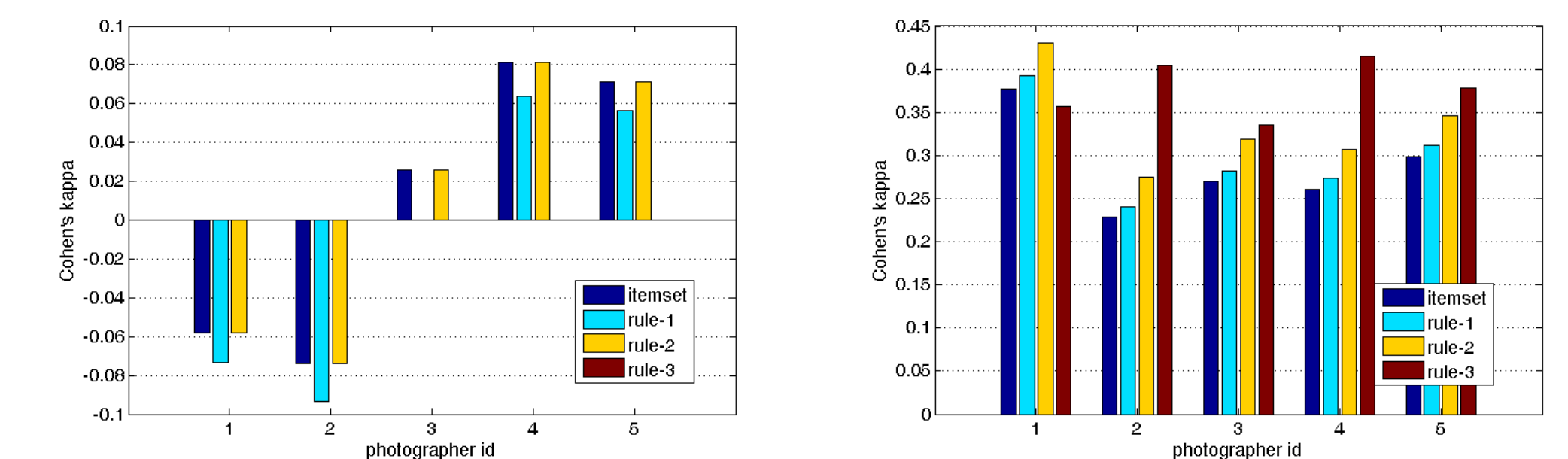| Itemset	Using the highest scored itemset
Rule-1	Using the highest scored association rule
Rule-2	Using high scored rules (above a threshold)
Rule-3	Using all rules

EXPERIMENTS

- ☐ Test set: 50 selfies of Asian women
- ☐ Ground truth: collected from 5 photographers

Interrater Reliability

- ■ Horizontal: Slight agreement (Fleiss' kappa 0.0205)
- ■ Vertical: Moderate agreement (Fleiss' kappa 0.5935)

Results

- ■ Horizontal: Agrees with rater #4 and rater #5 slightly more than the others. Yet the agreement is extremely weak.
- ■ Vertical: the recommendation results are moderately consistent with those of the raters.
- ■ **Rule-3 > Rule-2 > Rule-1 > itemset**

CONTACTS

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