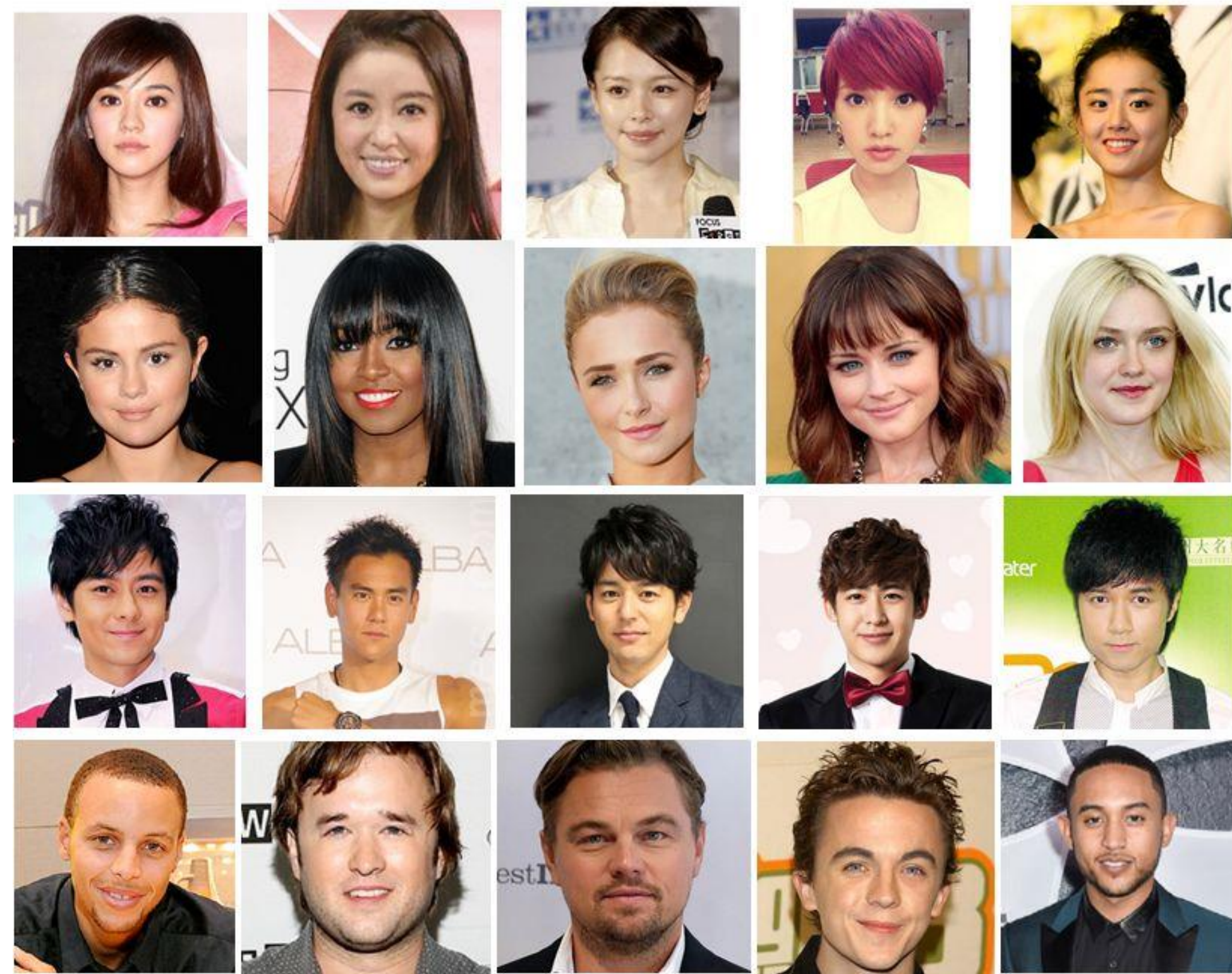# A Computational Approach to Finding Facial Patterns of a Babyface

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What constitute a babyface?

- A computational, data-driven approach
- Utilizing voluminous face images on the web

BABYFACE DATASET

We collected babyface images from the Internet using a list of 40 generally recognized babyfaced celebrities. Non-frontal images were removed.

No. of images	2178
No. of identities	40
Female	52.5%
Male	47.5%
Age	22 - 45

All are frontal or near-frontal face images!

APPROACH

Pattern Formation

1. distance of two points
2. ratio of two lines
3. area of a polygon
4. ratio of two areas

The patterns capture both individual and spatial arrangement of facial components!

Pattern Mining and Scoring

- Formulating a frequent itemset mining problem
- Facial pattern ~ item
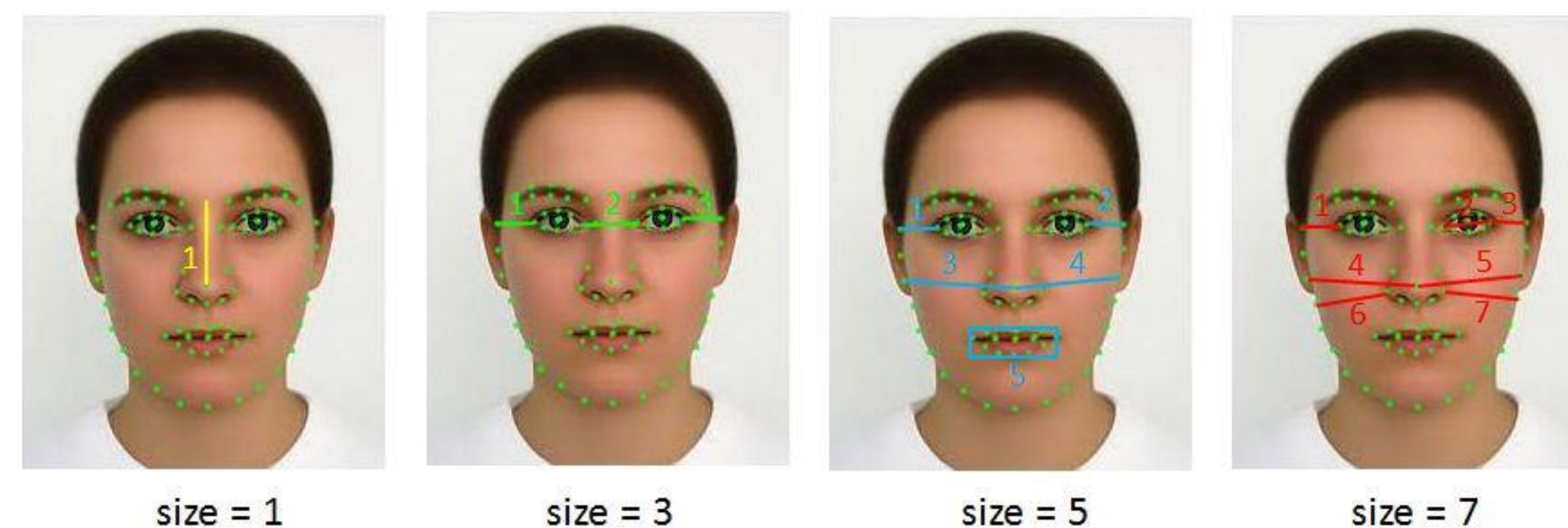- Face Image ~ transaction

Mining distinctive patterns from babyfaces and LFW:

$$conf(P \rightarrow babyface) > conf_{min}$$
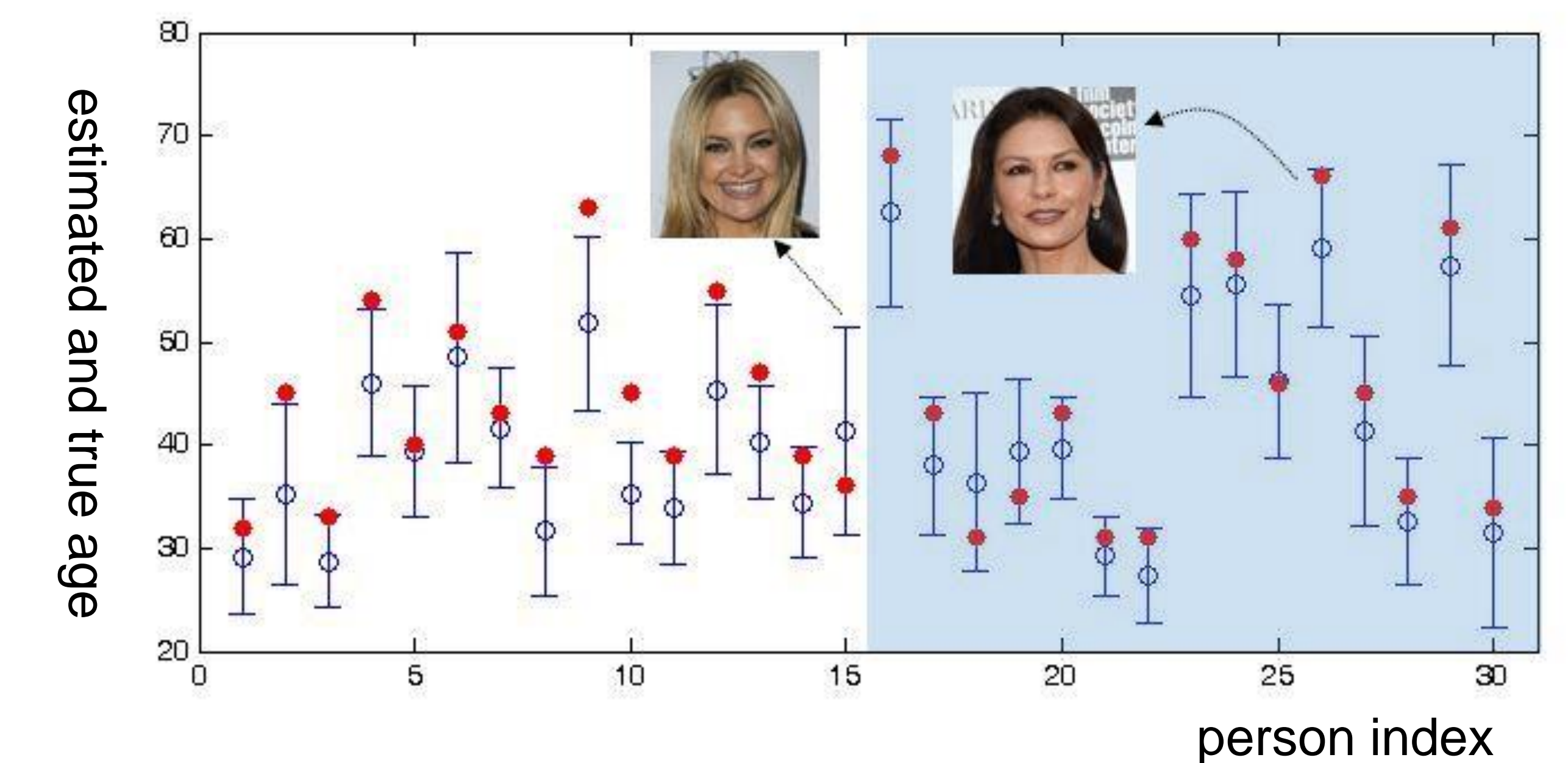
Scoring the babyfacedness of a test image:

$$f(I) = \sum_i |P_i| \cdot m(I, P_i)$$

Examples of Discovered Patterns

size = 1   size = 3   size = 5   size = 7

EXPERIMENTAL RESULTS

One hundred images were randomly selected from the LFW, ranked by its babyfacedness score determined by our approach. The top and bottom 15% ranked images were used in the evaluation, containing 14 males and 16 females.

The automatically identified babyfaced people tend to look much younger than their current age. Average gap: 5.24 and 2.41

CONTACTS

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