Face Processing in Video

Tác giả thứ nhất[1,3] **Tác giả thứ 2**[2] **Tác giả thứ 3** [3,1] *and* **Tác giả thứ 4** [3,1]

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What ?

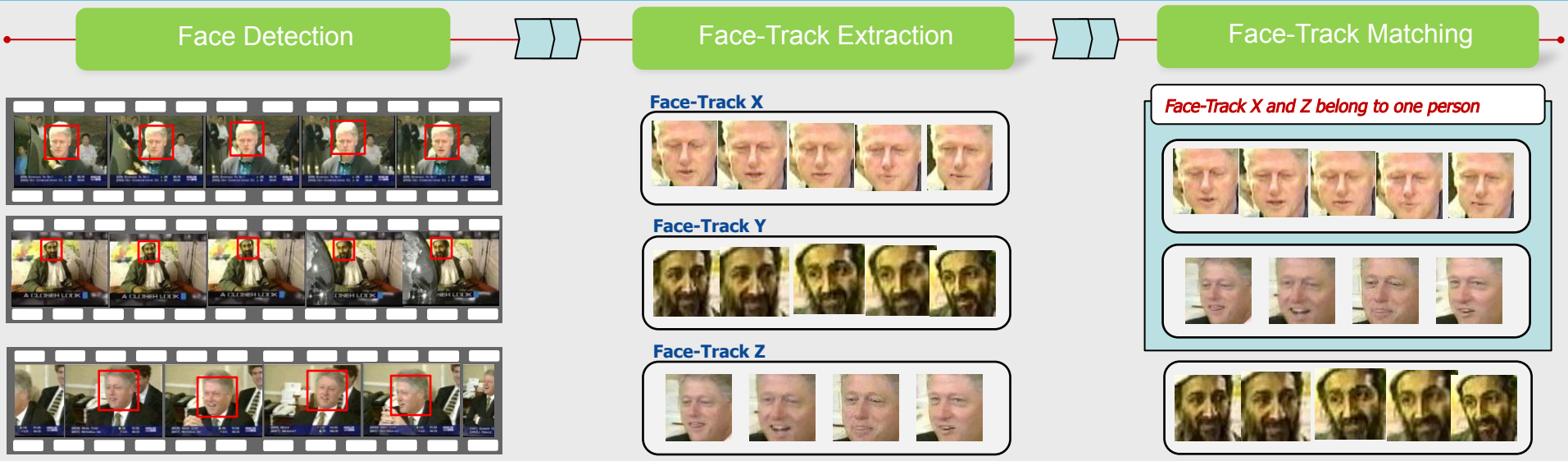
We introduce a framework to process and retrieve faces in video, in which we have:

- Proposed a robust method to extract face-tracks in news video.
- Built the largest face database compare to current popular worldwide face databases.
- Evaluated several face-track matching methods.

Why ?

- The human face is one of the most important objects in video since it provides rich information for spotting people of interest and is the basis for interpreting facts. Therefore, detecting and recognizing faces appearing in video are essential tasks of video indexing and retrieval applications.
- Most studies have focused on static images rather than ***large-scale*** and ***real video dataset*** .

Overview



Description

1. Face Detection

- The face detector implemented in OpenCV based on Viola method was used for detecting frontal views of faces in every frame of our video sequences.
- A high threshold was used to reduce the number of false positives.

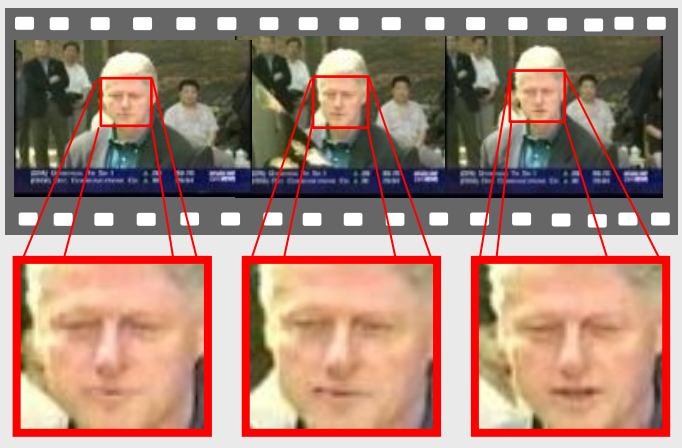


Figure 1. Detection results with a high threshold.

2. Face-Track Extraction

- We used Kanade–Lucas–Tomasi (KLT) method to create and track key/interest points between frames.
- The number of key points that pass through pairs of faces in consecutive frames was computed to make decision on grouping faces into face-tracks.
- Several treatments are proposed to handle tracking traps in news video.
  - Flash-frame detector.
  - Adaptively generating key points.

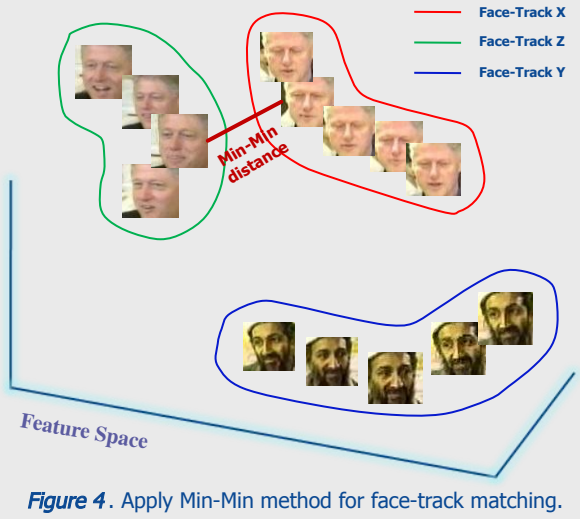


Figure 4. Apply Min-Min method for face-track matching.

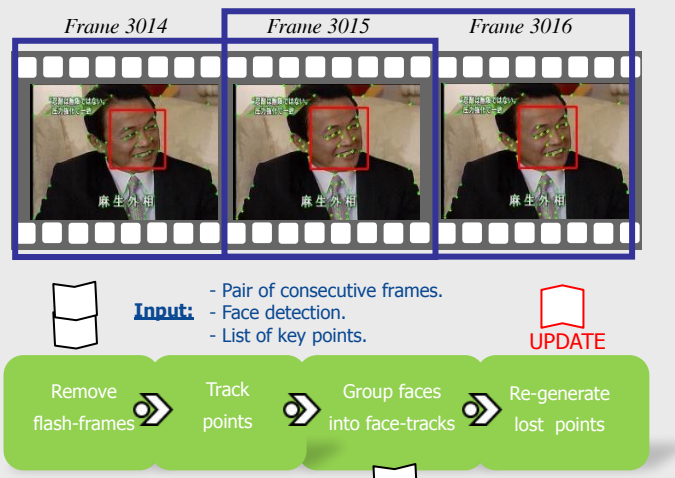


Figure 2. Process-flow of face tracker.

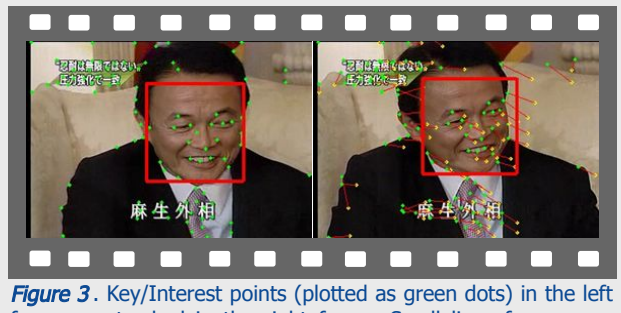


Figure 3. Key/Interest points (plotted as green dots) in the left frame are tracked in the right frame. Small lines from green dots are motion of these points. Two faces in these frames share 22/23 points.

3. Face-Track Matching

- Face-track matching is done by applying similarity estimation methods (e.g. Min-Min distance) on the feature space.

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