Video-based Fingerprint Verification

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We try to use more information for recognition.

How to take advantage of the information in videos? How to measure the similarity of two videos?

A method named Video Matching Score Calculation (VMSC) is proposed. First we define the “inside-similarity” and “outside-similarity” to represent the similarity within a video and between two videos, respectively. Then the two kind of similarity are used to calculate the final matching score.

1. outside-similarity:
   Score-level fusion \ Sum Rule
   We use $S^o$ to represent the “outside-similarity”. By sum rule:
   $$S^o = \frac{1}{3} \times (s1+s2+s3)$$
   This is only one strategy to calculate $S^o$!

2. inside-similarity:
   Matching Score: $s4$
   Matching Score: $s5$
   Matching Score: $s6$
   So the “inside-similarity” can be represented by $S^i$:
   $$S^i = \frac{1}{3} \times (s4+s5+s6)$$

3. Final matching score:
   The final matching score of video1 and video2 can be represented by $S^r$:
   $$S^r = S^o + w \times (S^o - S^i); \quad w \text{ is the weight and } w > 0.$$  
   The effect on the error probability of VMSC is analyzed theoretically. We find that comparing to the single impression based method, our method enlarges the difference between the expectation of the genuine matching score and that of the impostor matching score.

Experimental results indicate that VMSC can get a higher accuracy than the single impression based fingerprint system.