

COMPUTER VISION

Project-3

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Blink Detection

The original code does not do a good detection of whether a person is blinking or not.

There are following thoughts while approaching to solve this project:






















- If the pixels are pinpointed to a very tiny point of the eye, there might be small difference between the eyes. This will be then reflected in the epsilon value that is used as a classification between blink and no blink.
- If the pixels are too broad, it might not even detect the difference between blink and no blink.
- The image can be blurred to a certain degree and then if we check the difference between the 2 eyes, we can get a better idea.

I did different trials by changing different values.

The most effective of all was the change in the epsilon value. I did multiple iterations with different values of epsilon.

Below table shows the observations.

Wink : 1
No wink : 0

																											
Actual Wink	1	0	1	1	0	1	1	0	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	21	
Detected (Epsilon = 150)	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	1	1	0	0	1	0	0	0	8	# Detections	
Difference from actual	1	0	1	1	0	1	1	0	0	0	0	0	1	1	1	1	0	0	1	1	0	1	1	1	9	2A-B	
Detected (Epsilon = 100)	0	0	0	0	0	1	0	0	1	1	0	0	1	0	1	1	1	0	0	1	1	0	0	0	11	# Detections	
Difference from actual	1	0	1	1	0	0	1	0	0	0	0	0	1	0	0	0	1	1	0	0	1	1	1	1	18	2A-B	
Detected (Epsilon = 50)	1	1	1	1	0	1	1	0	1	0	0	0	1	0	1	1	1	0	1	1	1	1	1	0	20	# Detections	
Difference from actual	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	9	2A-B	
Detected (Epsilon = 25)	1	1	1	1	0	1	1	0	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0	21	# Detections	
Difference from actual	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	42	2A-B	
Detected (Epsilon = 20)	1	1	1	1	0	1	1	0	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	22	# Detections	
Difference from actual	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	45	2A-B	
Detected (Epsilon = 15)	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	25	# Detections	
Difference from actual	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	42	2A-B	
Detected (Epsilon = 10)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	27	# Detections	
Difference from actual	0	1	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	36	2A-B	

For the video part, results were not good with the same epsilon. So, I did some iterations, and found that higher value of epsilon is more suitable.

Inference:

I found that keeping other values same and fixing epsilon value as 20 gives the most favorable results.

For the video we need a higher value of epsilon. After multiple trials I found 172 as a good one.