Project Approach

Part I: Wink detection

After the faces are detected, locate the ROI at upper 1/3 of the face area and slightly narrower than the face width, then detect eyes in the ROI.

Divide the ROI into left and right two part equally, count the sum number of left eye and right eye, return true if the sum is 1. Here constraint is the center of an eye is located at 1/3 and 2/3 width position of the ROI and the left or right edge of an eye cannot cross the middle of a face. And each side of ROI can maximum has 1 eye.

Detail parameters:

ROI x = face.x + face.width*0.05, y = face.y+face.height*0.2,

width=face.width*0.9, height = face.height*0.35

eye ROI.width*0.16 < eye.width < ROI.width*0.36

ROI center - ROI.width*0.3 < left center < ROI center – ROI.width*0.1

ROI center + ROI.width*0.1 < right center < ROI center + ROI.width*0.3

Left edge < ROI center – ROI.width*0.035

Right edge > ROI center + ROI.width*0.035

	True wink	False wink	
Detect true wink	18	0	18
Detect false wink	2	5	7
	21	6	

Part II: Silence detection

After faces are detected, locate the ROI at lower 1/3 part of a face and the width is half of the face in the middle. Then detect moth in the ROI.

Smallest mouth allowed for detection is about half width and 1/3 height of ROI, also the center of a mouth should not have a large offset to the center of ROI. Then return true if number of mouth detected is 0.

Detail parameters:

ROI x = face.x + face.width*0.23, y = face.y + face.height*0.63

Width = face.width*0.5, height = face.height*0.38

Mouth size: width >= ROI.width*0.62, height >= ROI.height*0.33

Mouth center offset to the ROI center <= ROI.width*0.14

Result:

	True silence	False silence	
Detect true silence	12	1	13
Detect false silence	0	14	14
	12	15	