IFS DriverAlert

Integration Testing

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The following table shows the integration tests conducted for the Intelligent Focus System (IFS) DriverAlert. Each test verifies the interaction between key components to ensure proper functionality and expected behavior. The tests primarily focus on detecting drowsiness indicators and triggering appropriate alerts to enhance driver safety.

Table 1: Integration Testing CoverageTable:

TestCase ID	Tested Units/ Components	Description	Interaction Points	Expected Outcome	Actual Outcome
test_get_box_ and_process_ image()	get_box(), prepare_eye_for_ model()	Tests the extraction of bounding box coordinates from landmarks and processes the eye image for model input.	Calls get_box() to extract bounding box from landmarks and then processes the cropped image using prepare_eye _for_model().	Bounding box coordinates match expected values. processed eye image shape is (1, 48, 48, 3).	✅ **Pass**
test_eye_ closure_ detected_ and_alert()	detect_eye_ closure(), alert_func(), Speaker	Tests the detection of eye closure and verifies that alert volume increases progressively with repeated alerts. In the third alert, the alert message is different.	Calls detect_eye_ closure() to determine if eyes are closed; calls alert_func() three times to check alert progression.	First alert has low volume, second alert increases volume, third alert switches to a different alert file with higher volume.	✅ **Pass**
test_yawn_dete cted_and_alert()	detect_yawn(), alert_func(), Speaker	Tests the detection of yawning and verifies that alert volume increases progressively with repeated alerts. In the third alert, the alert message is different.	Calls detect_yawn() to determine if yawning is detected; calls alert_func() three times to check alert progression.	First alert has low volume, second alert increases volume, third alert switches to a different alert file with higher volume.	✅ **Pass**
test_turn_ detected_and _alert()	detect_face_turn() , alert_func(), Speaker	Tests the detection of face turning and verifies that alert volume increases progressively with repeated alerts. In the third alert, the alert message is different.	Calls detect_face_ turn() to determine if face turning is detected; calls alert_func() three times to check alert progression.	First alert has low volume, second alert increases volume, third alert switches to a different alert file with higher volume.	✅ **Pass**