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FACULTY OF ENGINEERING
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Test Plan, Test Design Specifications and Test Cases

Version 2

CENG 408

Innovative System Design and Development II

P2019-11
FATIGUE DETECTION

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1. INTRODUCTION

Version Control

Version No	Description of Changes	Date
1.0	First Version	Apr 24, 2020
2.0	Second Version	May 28, 2020

Overview

Designed system does not require any GUI but for testing the system a user interface needed which we will call it the testing interface. Detecting the user's facial movements is fatal our system which means we will need the individuate the mouth, eyes and the entire face.

Scope

This document will include the test cases that we will consider in Fatigue Detection system.

Terminology

Acronym	Definition
GUI	Graphical User Interface
UI	User Interface

2. FEATURES TO BE TESTED

This section lists and gives a brief description of all the major features to be tested. For each major feature there will be a Test Design Specification added at the end of this document.

Face Detection (FD)

Face detection has a major impact in this system. According to detection of users' face, the system will be able to detect other symptoms.

Eye Detection (ED)

Frequently eye blinking is an important symptom for this system. Detecting the eyes will provide serious data to the system.

Mouth Detection (MD)

Yawning is one of the most important symptoms to be able to detect yawning, firstly the system should detect mouth of the user.

Road Lane Detection (RLD)

To understand the behavior of user, we will also consider lane tracking. This will provide more information to the system aside with other symptoms.

Test Interface (TI)

This interface will contain different parameters, buttons and it will show the current images of both cameras in the car. We will also test this interface.

3. ITEM PASS/FAIL CRITERIA

With the dataset that we have, we will test specific images, videos for the detection of the features that we mentioned above. We will test our code and if the accuracy is higher than 85%, we will accept it.

Exit Criteria

- 100% of the test cases are executed
- 85% of the test cases passed
- All High and Medium Priority test cases passed

4. REFERENCES

https://github.com/CankayaUniversity/ceng-407-408-2019-2020-Fatigue-Detection/wiki/SoftwareDesign-Document
https://github.com/CankayaUniversity/ceng-407-408-2019-2020-Fatigue-Detection/wiki/SoftwareRequirements-Specification

5. TEST DESIGN SPECIFICATIONS

5.1 Test Interface (TI)

5.1.1 Subfeatures to be tested

5.1.1.1 Camera Switch Button (TI.Cam.Swc.But)

Tester can switch between the two cameras (one for users' facial movements control, other one is for road lanes) by selecting the camera button.

5.1.1.2 Fatigue Result (TI.Fat.Res)

This system measures fatigue level of the user. To measure the fatigue level, the system needs above features to work. According to these measures, the system will calculate the fatigue level and alert the user if it is too high.

5.1.1.3 Exit Button (TI.Exit)

5.1.2 Test Cases

TC ID	Requirements	Priority	Scenario Description
TI.Cam.Swc.But	*6.3.1*	*M*	*For accessing to the cameras.s*
TI.Fat.Res	*6.3.1*	H	Detect signs of fatigue and then warn if the result is positive(which means user is fatigued).
TI.Exit	*6.3.1*	L	Exit testing interface.

6. Detailed Test Cases

TI.Cam.Swc.But

TC_ID	TI.Cam.Swc.But
Purpose	Switch between user and road lane cameras.
Requirements	6.3.1
Priority	Medium
Estimated Time Needed	20 Secs.
Dependency	For both cameras there has to be an input.
Setup	No installation required.
Procedure	System is running

	Open testing Interface
	Select between cam1 and cam2
Cleanup	Exit

TI.Fat.But

TC_ID	TI.Fat.Res
Purpose	Fatigue Detection
Requirements	6.3.1
Priority	High
Estimated Time Needed	10 Minustes
Dependency	Symptom detection and comparasion.
Setup	No installation required.
Procedure	System is running
	Open testing Interface
	Both cameras are running.
	System is looking for symptoms and analyzing
Cleanup	Exit

TI.Exit

TC_ID	TI.Exit
Purpose	Exit from the system
Requirements	6.3.1
Priority	Low
Estimated Time Needed	10 Secs
Dependency	-
Setup	-
Cleanup	-

7. Test Results

7.1 Individual Test Results

TC ID	Priority	Date Run	Run By	Result	Explanation

TC ID	Priority	Date Run	Run By	Result	Explanation
TI.Cam.Swc.But	M	15.04.2020	Berkay Ekebaş	Fail	Input error.
TI.Cam.Swc.But	M	16.04.2020	Berkay Ekebaş	Pass	
TI.Fat.Res	H	25.04.2020	Damla Ebru Parlak	Fail	The system failed to start.
TI.Fat.Res	H	1.05.2020	Damla Ebru Parlak	Fail	Algorithm errors.
TI.Fat.Res	H	6.05.2020	İrem Kaymakçılar	Fail	Algorithm errors.
TI.Fat.Res	H	7.05.2020	Damla Ebru Parlak	Fail	Algorithm errors.
TI.Fat.Res	H	11.05.2020	İrem Kaymakçılar	Fail	Algorithm errors.
TI.Fat.Res	H	12.05.2020	Damla Ebru Parlak	Fail	Symptom detection error.
TI.Fat.Res	H	14.05.2020	Berkay Ekebaş	Fail	Symptom detection error.
TI.Fat.Res	H	15.05.2020	İrem Kaymakçılar	Fail	Symptom detection error.
TI.Fat.Res	H	17.05.2020	Damla Ebru Parlak	Fail	Accuracy lower than expected (85%)
TI.Fat.Res	H	19.05.2020	Berkay Ekebaş	Fail	Accuracy lower than expected (85%)
TI.Fat.Res	H	20.05.2020	Damla Ebru Parlak	Fail	Accuracy lower than expected (85%)
TI.Fat.Res	H	20.05.2020	Irem Kaymakçılar	Fail	Accuracy lower than expected (85%)
TI.Exit	L	18.04.2020	Berkay Ekebaş	Pass	

7.2 Summary of Test Results

Priority	Number of TCs	Executed	Passed
H	1	25	0

Priority	Number of TCs	Executed	Passed
M	1	10	6
L	1	10	10
Total	**3**	**45**	**16**

7.3 Exit Criteria

Criteria	Met or Not
100% of the test cases are executed	Y
85% of the test cases passed	N
All High and Medium Priority test cases passed	N

7.4 Known Problems

Fatigue definition can change from person to person and it is a very versatile issue. Therefore, there is no specific definition of “Fatigue”. Also, we can say that there are many anti thesis about this topic according to our researches.

7.5 Conclusion

It can be seen from the results that the expectations did not meet with reality. According to these test results, the product is not ready for use. On the other hand, this system is open to any kind of improvements.