



FINAL YEAR PROJECT REPORT

REALTIME CLOUD BASED AUTOMOBILE DROWSINESS DETECTION

**In fulfillment of the requirement
For degree of
BS (COMPUTER SCIENCES)**

By

SYED SHAHEER HASSAN

67754 (BSCS)

KAMAL KUMAR

67747 (BSCS)

MOHAMMAD HAMMAD AHMAD

67751 (BSCS)

SUPERVISED

BY

DR. GHULAM MUHAMMAD

BAHRIA UNIVERSITY (KARACHI CAMPUS)

FALL-2023

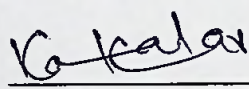
DECLARATION

We hereby declare that this project report is based on our original work except for citations and quotations which have been duly acknowledged. We also declare that it has not been previously and concurrently submitted for any other degree or award at Bahria University or other institutions.

Signature : 

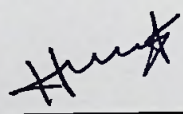
Name : Syed Shaheer Hassan

Reg No. : 02-134201-068

Signature : 

Name : Kamal Kumar

Reg No. : 02-134201-058

Signature : 

Name : Hammad Ahmad

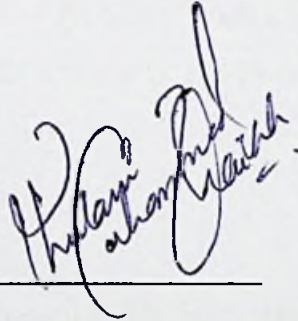
Reg No. : 02-134201-063

Date : 18/01/2024

APPROVAL FOR SUBMISSION

I certify that this project report entitled **"REALTIME CLOUD BASED AUTOMOBILE DROWSINESS DETECTION"** was prepared by **Kamal Kumar, Syed Shaheer Hassan, Muhammad Hammad Ahmed** has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of Computer Science at Bahria University.

Approved by,

Signature :  _____

Supervisor : Dr. Ghulam Muhammad

Date : 18/01/2024

The copyright of this report belongs to Bahria University according to the Intellectual Property Policy of Bahria University BUORIC-P15 amended on April 2019. Due acknowledgement shall always be made of the use of any material contained in, or derived from, this report.

© 2023 Bahria University. All right reserved.

Specially dedicated to
My beloved grandmother, mother and father
Syed Shaheer Hassan
My beloved grandmother, mother and father
Kamal Kumar
My beloved grandmother, mother and father
Mohammad Hammad Ahmad

ACKNOWLEDGEMENTS

We would like to thank everyone who had contributed to the successful completion of this project. We would like to express my gratitude to my research supervisor, Dr Ghulam Muhammad for his invaluable advice, guidance and his enormous patience throughout the development of the research.

In addition, we would also like to express my gratitude to our loving parent and friends who had helped and given me encouragement.

REALTIME CLOUD BASED AUTOMOBILE DROWSINESS DETECTION

ABSTRACT

The main objective of this project is to reduce road accidents and save human life. Studies shows that around 25% of all serious accidents are caused because of sleepy driver. Those who do not take breaks after specific time, especially on long routes run a high risk of becoming sleepy and drowsy. Alerting the driver is the best way to avoid the road accidents. To achieve this goal, a system is proposed that can detect the drowsiness of a driver and alert to reduce road accidents and save many lives. There are numerous methods to detect the drowsiness. In this paper, we have used image process approach to detect the drowsiness because image processing techniques are quicker and more accurate in comparison with other techniques. Our System will take images of driver with the help of camera and images processed through the system to analyse the changes that happen in the face of driver and then send alert to driver based on result made from images. Our system is calculated EAR ration using eye landmarks with the help DLIB. We have used speaker and warning light to alert the driver. Our system also has SMS AND EMAIL module, it is used to send alert with last updated or current location to the emergency number set by users.

TABLE OF CONTENT

DECLARATION	ii
APPROVAL FOR SUBMISSION	iii
ACKNOWLEDGEMENTS	vi
ABSTRACT	vii
TABLE OF CONTENTS	viii
LIST OF TABLES	xii
LIST OF FIGURES	xiii
LIST OF APPENDICES	xiii

CHAPTERS

1	INTRODUCTION	1
	1.1 Background	1
	1.2 Problem Statement	1
	1.3 Aims and Objectives	2
	1.4 Scope of Project	2
2	LITERATURE REVIEW	3
	2.1 Real-Time Drowsiness Identification based on Eye State Analysis	3
	2.2 Anti Sleep Alarm For Drivers	4
	2.3 Evaluation of driver drowsiness using respiration analysis by thermal imaging on a driving simulator	4
	2.4 Real-Time Drowsiness Detection System for Driver Monitoring (2020)	5
	2.5 Non-Invasive Driver Drowsiness Detection System	5
	2.6 Driver drowsiness detection through HMM based dynamic	

	modeling	5
2.7	Human and vehicle-driver drowsiness detection by facial expression	6
2.8	Driver drowsiness detection system.” 2013 8th international workshop on systems, signal processing and their applications (WoSSPA)	6
2.9	Overview of research on driver drowsiness definition and driver drowsiness detection	7
2.10	Real-Time Drowsiness Identification based on Eye State Analysis	7
3	REQUIREMENT SPECIFICATIONS	10
3.1	Existing System	10
3.2	Proposed System	10
3.3	Requirement Specification	10
	3.3.1 Functional Requirements	10
	3.3.2 Non-Functional Requirements	10
3.4	Use Case	11
4	DESIGN AND METHODOLOGY	12
4.1	Project Methodology	12
4.2	Project Methodology (Architecture)	13
4.3	Process Model	14
	4.3.1 Modules Discussion	14
	4.3.1.1 Raspberry Pi	14
	4.3.1.2 Camera	14
	4.3.1.3 SMS API (TWILIO)	15
	4.3.1.4 Gmail SMTP	15
	4.3.1.5 Speaker	15
	4.3.1.6 Warning Light	15
	4.3.1.7 Push Button	15
	4.3.2. Mobile Application	15

		x
	4.3.2.1 Online Database	15
	4.3.2.2 History	15
	4.3.2.3 Emergency Number Update	15
	4.3.2.4 Emergency Email Update	16
5	SYSTEM IMPLEMENTATION	17
	5.1 Implementation	17
	5.2 Components Used	18
	5.3 Results	18
	5.4 Mobile Application Results	20
6	SYSTEM TESTING AND EVALUATION	26
	6.1 Test Cases	26
	6.1.1 Testing In Daylight	26
	6.1.2 Testing In Dim light	26
	6.2 SMS Alert	27
	6.3 Email Alert	28
7	CONCLUSION	30
	REFERENCES	31
	APPENDICES	34