DRIVER DROWSINESS DETECTION SYSTEM

A MINI PROJECT REPORT

Submitted by

MUKESH KOLAPPAN A (312419205065) OM PRAKASH K (312419205073)

BACHELOR OF TECHNOLOGY

in

INFORMATION TECHNOLOGY



St. JOSEPH'S INSTITUTE OF TECHNOLOGY, CHENNAI- 600 119



ANNA UNIVERSITY, CHENNAI 600 025

JUNE 2022

ANNA UNIVERSITY: CHENNAI 600 025



BONAFIDE CERTIFICATE

Certified that this project report "DRIVER DROWSINESS DETECTION SYSTEM" is the bonafide work of MUKESH KOLAPPAN A (312419205065) and OM PRAKASH (312419205073) who carried out the Mini project work under my supervision.

SIGNATURE	SIGNATURE
Dr. S.KALARANI M.E., Ph.D.,	Mr. M. KARTHI M. Tech., Ph.D.,
Professor	Assistant Professor
HEAD OF THE DEPARTMENT	SUPERVISOR
Department Of	Department Of
Information Technology	Information Technology
St. Joseph's Institute of Technology	St. Joseph's Institute of Technology
Old Mamallapuram Road	Old Mamallapuram Road
Chennai-600119	Chennai-600119
Submitted for the Viva-Voce held on	

(INTERNAL EXAMINER)

(EXTERNAL EXAMINER)

CERTIFICATE OF EVALUATION

College Name : St. Joseph's Institute of Technology

Branch & Semester: Information Technology (VI)

S.NO	NAMES OF	TITLE OF THE	NAME OF THE
	STUDENTS	PROJECT	SUPERVISOR WITH
			DESIGNATION
1.	MUKESH	"DRIVER	
	KOLAPPAN A	DROWSINESS	Mr. M. KARTHI M. Tech.,
	(312419205065)	DETECTION	(Ph.D).,
	(31241)203003)	SYSTEM"	Assistant Professor
2.	OM PRAKASH K		
	(312419205073)		

The report of the project work submitted by the above students for Mini Project (IT8611) in **Information Technology** of Anna University were evaluated and confirmed to be reports of the work done by the above students and then evaluated.

(INTERNAL EXAMINER)

(EXTERNAL EXAMINER)

ACKNOWLEDGEMENT

The contentment and elation that accompany the successful completion of any work would be incomplete without mentioning the people who made it possible.

I am extremely happy to express my gratitude in thanking our beloved Chairman **Dr. B. Babu Manoharan M.A., M.B.A., Ph.D.,** who has been a pillar of strength to this college.

Words are inadequate in offering my sincere thanks and gratitude to our our respected Director Mrs. B. Jessie Priya M.Com., heartfelt gratitude to our respected Chief Executive Officer Mr. B. Sashi Sekar M.Sc., and our beloved Principal Dr. P. Ravichandran M.Tech., Ph.D., for having encouraged me to do my under graduation in Information Technology in this esteemed college.

I also express my sincere thanks and most heartfelt sense of gratitude to our eminent Head of the Department **Dr. S. Kalarani M.E., Ph.D.,** for having extended her helping hand at all times.

It is with deep sense of gratitude that I acknowledge my indebtedness to my beloved supervisor and my mentor **Mr. M. Karthi M.Tech.**, (**Ph.D**)., a perfectionist for her expert guidance and connoisseur suggestion.

Last but not the least, I thank my family members and friends who have been the greatest source of support to me.

ABSTRACT

Drowsiness of the drivers is one of the key issues for majority of road accidents. Latest statistics say that many of the accidents were caused because of drowsiness of drivers. Drowsiness threatens the road safety and causes severe injuries sometimes, resulting in fatality of the victim and economical losses. Drowsiness implies feeling lethargic, lack of concentration, tired eyes of the drivers while driving vehicles. Vehicle accidents due to drowsiness in drivers are causing death to thousands of lives. More than 30% accidents occur due to drowsiness. For the prevention of this, a system is required which detects the drowsiness and alerts the driver which saves the life. In this project, we developed a system that is able to detect the drowsiness nature of the driver and alert him immediately. In this, the driver is continuously monitored through webcam. This model uses image processing techniques which mainly focuses on face and eyes of the driver. The model extract the drivers face and predicts the blinking of eye from eye region. We use an algorithm to track and analyze drivers face and eyes to measure Perclos. If the blinking rate is high then the system alerts the driver with a sound.

LIST OF FIGURES

FIG NO	NAME OF THE FIGURE	PAGE NO
4.1	ARCHITECTURE DIAGRAM	26
4.2	USE CASE DIAGRAM	27
4.3	ACTIVITY DIAGRAM	28
4.4	SEQUENCE DIAGRAM	29
4.5	COMPONENT DIAGRAM	30

TABLE OF CONTENTS

CHAI NO	PTER	TITLE	PAGE
	A	BSTRACT	iv
	L	IST OF FIGURES	v
1	INTRODUCT	ION	1
	1.1 SYSTEM	M OVERVIEW	1
	1.1 Diff	erent Approaches to Detecting Drowsiness	1
	1.1	.1 Behavioural Parameters-Based Techniques	1
	1.1	.2 Vehicular Parameters-Based Techniques	2
	1.1	.3 Physiological Parameters-Based Techniques	2
	1.1	.4 Digital Image Processing	3
	1.2 MOTIV	ATION FOR THE WORK	4
	1.3 PROBLI	EM STATEMENT	4
2	LITERARTUR	RE SURVEY	5
	2.1 Drowsin	ess Detection Through Region Of Interest	5
	2.2 Detectio	n of Drowsiness Through LBPH	6
	2.3 Behavio	ural Based Techniques	6
	2.3.	1 Eye Tracking and Dynamic Template Matching	7
	2.3.	2 Mouth and Yawning Analysis	7
	2.3.	3 Facial Expressions Method	8
	2.3.	4 Yawning Extraction Method	8
	2.3.	5 Eye Closure and Head Postures Method	9
	2.3.	6 Real Time Analysis Using Eye and Yawning	9
	2.3.	7 Eye Blink Detection Method	11
	2.3.	8 Eye Closeness Detection Method	12
	2.4 Vehicula	r Parameter-Based Techniques	13
	2.4.	1 Real Time Lane Detection System	13

	2.4.2	Time Series Analysis Of Wheel Angular Velocity	14
	2.4.3	Steering Wheel Angle For Real Driving For DDT	14
	2.4.4	Automatic Detection Of Driver Fatigue	15
	2.5 Drowsiness Detection Through Physiological Approach		15
	2.5.1	EEG-Based Driver Fatigue Detection	16
	2.5.2	Wavelet Analysis Of Heart Variability & SVM	17
	2.5.3	Pulse Sensor Method	17
	2.5.4	Wearable Driver Drowsiness Detection System	18
	2.5.5	Wireless Wearables Method	18
	2.5.6	Driver Fatigue Detection System	19
	2.5.7	Hybrid Approach Utilizing Physiological Features	19
3	SYSTEM ANAL	YSIS	21
	3.1 Existing S	ystem	21
	3.2 Proposed S	System	21
	3.2.1	Advantages of the Proposed System	21
	3.3 Requireme	ent Specification	22
	3.3.1	Software Requirement	22
	3.3.2	Hardware Requirements	22
	3.4 Language s	specification	23
	3.4.1	Python Programming Language	23
	3.5 Algorithm	Description	25
4	SYTEM DESIGN	N	26
	4.1 Architecture	e Diagram	26
	4.2 Use case dia	agram	27
	4.3 Activity dia	gram	28
	4.4 Sequence di	agram	29
	4.5 Component	diagram	30

5	SYSTEM IMPLEMENTATION	32
	5.1 Modular Division	32
	5.1.1 Haar Cascade	32
	5.1.2 PerClos	37
6	CONCLUSION AND FUTURE ENHANCEMENTS	39
	APPENDIX I	40
	Sample Coding	40
	APPENDIX II	47
	Screenshots	47
	REFERENCES	50