ZEBRA LINE DETECTION AND SPEED CONTROL SYSTEM USING RASPBERRY PI PICO & ESP32

A PROJECT REPORT

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BONAFIDE CERTIFICATE

Certified that this Report titled **"Zebra Line Detection and Speed Control System Using Raspberry Pi Pico & ESP32"** is the bona-fide work of **"JASWANTH RONAK.A (212218106104), JEEVANANDAM.K (212218106108), YUVARAJ.G (212218106312)"** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported here in does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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INTERNAL EXAMINER

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ABSTRACT

Now this scientific world getting better in technologies and have similar flaws in those technologies. Here we take a look in our transportation or driving. Because, the technology of transportation starts evolved from the stone age itself (Like founded a wheels). The current world technology evolved in transportation more than before. Like, from diesel to petrol engine also electric vehicles with automatic driving options and speed of the vehicles are getting increased by manufacturer to manufacturer. Also, from those technologies to ensure the safety of driver or public some traffic rules, traffic signals were made. For, Example traffic signal with zebra crossing, speed limit areas.

Many are not at all consider those traffic signs and rules because of hurry. From those overspeed or lack of concentration the accidents happens regularly. So, our moto is to ensure a safety driving and peoples safety in transportation. The objective of this project is to control accident near by zebra crossing and ensure the safety of the driver and safety of the people who are crossing roads.

Here, in our project we are using Raspberry Pi-Pico as a micro controller with image processing technique with IOT implementation like using the ESP32 wi-fi module (which use GSM) with camera (taking image frequently 1s delay). The processor always comparing image with the trained image using image processing technique. If the system detects the zebra crossing the function of motor gets stopped till crossing the zebra line.

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LIST OF SYMBOLS AND ABBREIVATIONS

CMOS	-	Complementary Metal Oxide Semiconductor
CRSS	-	Conditional Rounding with Scaling and Saturation
CSA	-	Carry Save Adder
RAM	-	Random Access Memory
FA	-	Full Adder
FFT	-	Fast Fourier Transform
FIR	-	Finite Impulse Response
FPGA	-	Field Programmable Gate Array
FPM	-	Floating Point Multiplier
HA	-	Half Adder
WI-FI	-	Wireless Fidelity
IP	-	Intermediate Product
MAC	-	Multiply and Accumulate Unit
IOT	-	Internet of Things
SBC	-	Single Board Circuit
GPS	-	Global Positioning System
INTERNET	-	International Network

CHAPTER 1

1.1 INTRODUCTION

Now, in this present generation the things in transportation properties like heavy traffic, riding fast, neglecting traffic signals are more common actions happened in present day to day life. So, the safety concern and awareness about accidents and its impacts in everyone's life are important things to be remember.

Growing and rushing population is also a concern here. Because of the vast population the usage of vehicles is increasing day by day. So, the possibility of occurring accident's is also increasing. It's all happen only because of the lack of concentration and indifferent behavior in following traffic signals. Also, the most of the accidents happen only because of overspeed.

Nowadays, the roads were very smooth to drive.so, many are riding fast. To control them the speed breakers are constructed near school areas, turnings and some crowdy areas. Speed breakers also some time makes accidents. It's happened by the lack of concentration and awareness of the driver. The same kind of human error can happen in zebra crossing too. To avoid this kind of mistaken accident's, we can implement our project by using a current evolving technology IOT.

It's a thing can connect a hardware system or accessing or operating a hardware system with using software programming by INTERNET. To detect the zebra crossing and speed breakers we can use image processing technique.

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