BLIND-SPOT VEHICLE DETECTION AND DISTANCE SENSOR USING PIC-MICROCONTROLLER

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ABSTRACT

This work describes the design of blind spot vehicle detection system. The system consists of PIC16F873 microcontroller as the controller unit and ultrasonic ranger SRF05 as the sensor. The LCD display is also provided by the system to display the distance of approaching vehicle in the blind spot area. The DC servo motor is used to rotate the side mirror of the vehicle and its position is supposed to change whenever a vehicle is detected in the blind spot area. The system has been successfully tested and it can detect any object in a range of 20cm to 3m.

KEYWORDS: Blind-spot, PIC16F873, SRF05, LCD, servo motor

CHAPTER 1

INTRODUCTION

1.1 Project Overview

Many car drivers do not realize that their car side mirror has a blind spot area. This area is not covered by driver's mirror. On a busy highway, relying solely on the mirrors while changing lane can lead to a collision with another vehicle. Some researchers use stereo vision for monitoring vehicle blind-spot which it generates disparity maps from which objects can be segmented [1,2]. This was done by applying the v-disparity algorithm, which has previously not been utilized in panoramic image processing. Others use cheap charge coupled device (CCD) grey level camera served as sensor and was mounted at the driver's outside rear-view mirror to monitor the blind spot and the alongside lane[3,4]. All of these methods including system from [5], use wide range camera and expensive sensors in order to capture those images. One of the cheapest blind spot detection system available is convex mirror, often called "spot mirror" [6]. It can bring blind spot into view, but their optical properties impart a great deal of distortion so as to make it difficult to judge distances. Although there are number of intelligent products available to consumers to deal with the blind spot problem, they are very costly [7].