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AUTOMATIC CONTROL OF VEHICLES: An Analysis

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Abstract: Over the past two decades, the automotive industry has aggressively researched ways to exploit modern computing and electronic advances in the development of safety, reliability, and entertainment technologies for vehicle. Now in this paper we will review about the sensors that are being used. Temperature sensor is used for detecting overheating in the engine.IR sensor is used to detect any obstacle and helps in the parking of the vehicle.LDR are used for signaling the high and low beam to the other . Advanced technology is used in the headlights as it can rotate in the direction of the steering accordingly.Automatic wiper is there with wiring at the top of the car that senses any liquid falling on it and the wiper will start working automatically.

Keywords-parking sensor,camera,control circuit,Speedometer,automation

I. INTRODUCTION

We use intelligent instruments in every part of our lives. It won't take much time that we realize that most of our tasks are being done by electronics. Very soon, aswe shall see, they will perform one of the most complicated tasks that a person does in a day, that of driving a vehicle. Automation of the driving control of two-wheelers is one of the most vital need of the hour. This technology can very well implement what was absent before, controlled lane driving. Automation of the driving control of two-wheelers is one of the most vital need of the hour. This technology can very well implement what was absent before, controlled lane driving. At present, automatic control is used to enhance performance of cars currently in production. Precise control of the air-to-fuel (AIF) ratio is required to efficiently utilize catalytic converters to minimize exhaust emissions. To measure the amount of water usually use optical sensor. In this type of sensors uses the fact that the refraction angle and the amount of reflection of the light are different when the 2 windshield is wet. Even though optical sensors are used widely they have some disadvantage. One of disadvantages is the sensitivity to external light. Another problem is occurs when car drive at night or gone through tunnel and even in underground parking. Another shortfall, maybe a major one is that the sensing area is a relatively small portion of windshield. In this paper, we present the concept using a vision-based smart wiper system that a driver to collect visual information during precipitation. The decision include at what speeded the wiper motor rotate, and check whether there is any change in outer and inner temperature if there is small changes then no action to be taken, and if there is vast changes in temperature then which will automatically make the response to the presence of moisture and according adjust that temperature and remove moister inside car windshield.

II. REVIEW OF EXISTING TECHNOLOGIES

1) Camera

We intend to use a camera with a large field of vision. This F.O.V. should extend from 0.5 m before the two-wheeler to 30 m ahead. This camera is located just about the front tire hood. It is angled in order to get this F.O.V. The camera has the following properties:

1) It is a high resolution camera so that it sees clearly in it's F.O.V.

2) It captures images at intervals of 0.1 ms.

3) The images have a depth of 2 bits. i.e. the camera can detect only four colours at the most. This is a significant point because it reduces the cost of the camera. The most practical way to implement this type of camera is to use a small grayscale video camera which generates an AVI file. Obviously the audio part is useless to us, so we will leave it out. We can sample this AVI file at particular time intervals (0.1 ms) and get a BMP file. This BMP file has a particular size in pixels and is called "frame". All the graphical manipulations will be done using this frame. This frame is passed onto the control circuit.

2) Speedometer

We have a speedometer on the two wheeler. This analog input is digitized and given as an input to the control circuit. The speedometer on many two-wheelers is highly inaccurate. So we intend to use a better quality speedometer as it's readings are very crucial in the collision detection circuit.

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3) Control Circuit

This is the heart of the system and runs a program written in a high level language, C. The program written in C will have the image processing as it's main part. The image processing is the most time consuming task of the CPU. Hence and Intel 80486 based chip will be used. This image processing program takes the sampled frame from the camera and analyzes it as explained further in the algorithm. Depending upon the difference from the standard picture stored in the memory, the speed control, the tracking and obstacle detection sub-routines will be called. If either the tracking or the obstacle detection sub-routines are called, then the speed control program will not be called as the other two sub-programs will call the speed control programs in their own way. When none of the two, the obstacle or the tracking program have to be called for, the control circuit engages the speed control circuitry so that the two wheeler travels in a straight line at a constant speed of 30 km/h. The two subroutines are called along with the necessary daat as explained in the algorithm.

4) Parking Guidance

We depict the feature of parking guidance provided by our prototype system in this case. The parking guiding nodes are deployed at the turn offs of the parking area these nodes depict the availability of parking lots in three directions (left/right/ahead).

5) Temperature sensors

The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in ° Kelvin, as the user is not required to subtract a large constant voltage from its output to obtain convenient Centigrade scaling.

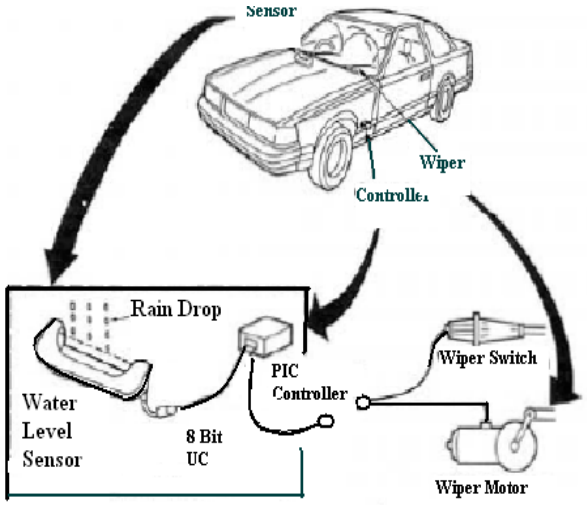

Fig 1. System Implementation On Car

6) Rain level Sensor

Rain level Sensor is a highly versatile device for automatic wiping of vehicle windscreen when it is wet due to moisture, raindrops or even mud. It measure the amount of water inside tube with respect to time within the windscreen. When water level are increase with respect to raindrops fall onto the windscreen, then system then activates the wiper to operate in full automatic mode. The main features is Automatic wiper activation and deactivation and Intelligent wipers speed control .

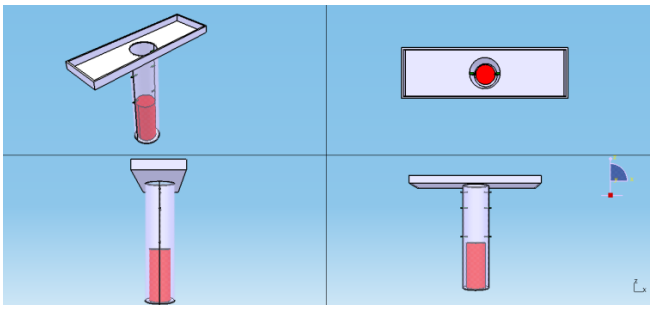

Fig 2. Model of Cup Sensor

Automatic rain-sensing wiper systems are relatively uncommon in modern vehicles for a number of reasons. They are often too expensive, too unsightly, or too unreliable to be desired in new automobiles. Many attempts have been made at constructing an effective, reliable, and cheap rain detection and wiper control system for vehicles speed and intermittent interval automatically according to the amount of rain.

7) Wireless Sensor Technology

Wide usage of wireless technologies with the recent advances in wireless applications for parking, manifests that digital data dissemination could be the key to solve emerging parking problems. Wireless Sensor Network (WSN) technologies have attracted increased attention and are rapidly emerging due to their enormous application potential in diverse fields [4]. This field is expected to provide an efficient and cost-effective solution to the effluent car parking problems.

IV. CONCLUSION

In this paper, we described the Smart management system using wireless sensor networks. Usage of custom control equipment reduces the cost as well. This wiper system reduce cumbersome wiper operation and improve driver's level comfort.It will give a new dimension of comfort and aid to the drivers who work at night and traffic prone areas where they already have to concentrate on brakes and clutch. The removal of controlling the wipers during rain will provide them much ease and help them concentrate on the basic ABC (accelerator, brake and clutch) of driving. Collision detection and avoidance systems should become more common place with the passage of time. People are living in a networked world and constantly feel that they have less time on their hands. It has been jokingly said, that "The more developed a country is, the more time it's citizens waste behind the steering wheel." To perfect this technique, it might take

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several years, Prevention is better than cure. So instead of treating patients after an accident, accidents should be prevented by incorporating this system.

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