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Implementation of Blind Zone Vehicle Detection by using Ultrasonic Sensor

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Abstract: Safety remains a top concern for automobile industries and new-car shoppers. So the new technology of Auto Mobile safety system has increased rapidly in recent years on rear view, particularly in relation to braking system and sensing system for detection of Blind Spots. In parallel to the development of braking technologies, sensors have been developed that are capable of detecting physical obstacles, other vehicles or pedestrians around the vehicle. This development prevents accidents of vehicles using Automated Emergency Braking Systems and Ultrasonic Sensors. Integrated safety systems are based on three principles. They are: Collision warning, collision mitigation braking systems and collision avoidance. The Ultrasonic Sensors provides spatial intelligence of up to 5 meters in rear of the vehicle and there is environment recognition of 2 meters. When ultrasonic sensor sense less than 0.2m, the brake is applied and dc motor will shut off. If the distance is greater than 0.2m the brake is released and DC motor will be active, automatically the LED glows, Such that cars can automatically apply brake due to obstacles or any hindrance when the sensor senses it.

Keywords: Ultrasonic Sensor, Hindrance.

I. INTRODUCTION

A visually impaired zone of a vehicle can be depicted as "ranges around the vehicle that can't be seen straightforwardly by the driver by looking advances or by utilizing any of the vehicle's standard back view mirrors (interior and outer) from the typical sitting position". (The term dazzle zone is utilized here as opposed to blind side, as the term is utilized to depict a region up to 10 meters in length and 3 meters wide instead of a solitary spot.) Existing visually impaired zone screens include the position of either radar or camera sensors on the wing mirrors or at the back of the vehicle and they show to the driver (by means of a sound cautioning or a notice light on the back view reflect) if a vehicle enters the visually impaired zone of the host vehicle. Radar-based cases of visually impaired zone observing incorporate Audi Side Assist, and Infiniti's Blind Spot Warning . Nonetheless, discovery issues have been related with radar based frameworks, for example, guardrails being dishonestly recognized as vehicle.. Radar-based frameworks give a high level of exactness in recognizing longitudinal movement, however sidelong development of vehicles as for a sensor in applications, for example, dazzle zone identification can yield conflicting outcomes. This is clear in circumstances, for example, when the overwhelming vehicle moves to another lane as for the host vehicle. Camera-based visually impaired zone observing frameworks are as a rule progressively utilized either as a remain solitary innovation or to supplement radar.

Cameras offer critical points of interest to radar frameworks, for example, more precise catching of parallel movement, higher determination and lower unit costs. One case of this is Volvo's Blind Spot Information System. In this paper, a dream based framework for following different vehicles and checking the visually impaired zone is proposed. Specifically, it covers the back of-vehicle daze zones on either side of the vehicle utilizing a ultrasonic sensor with a field of perspective of more prominent than the back of the vehicle. For vehicles drawing nearer from the back, the framework works by at first recognizing a moving toward vehicle. As an objective vehicle approaches the host vehicle and moves to either side in an adjoining path (in an overwhelming move), the presence of an objective vehicle changes because of the point of view impact, along these lines diminishing the execution of the classifier prepared to recognize an objective construct exclusively in light of its front view. To address this, twisting remedy capacities have been proposed preceding handling for vehicle discovery and passerby recognition applications utilizing strategies.

One technique depends on the Hough Circle Transform and the second depends on a novel form based strategy for distinguishing haggles curves, consequently alluded to as Wheel Arch Contour Detection (WACD). Following is likewise utilized to guarantee productive and predictable vehicle discovery on progressive casings. Since highlight based methodologies require a lot of adjustment, a subsection portraying parameter choice is exhibited for

Hough Circle Detection and WACD.A comparable subsection is incorporated into following, as alignment is additionally fundamental for calculations, for example, Harris Corner identification and Optical stream. At last, a novel test structure is proposed to introduce execution as a component of separation between the host and target vehicles (which is critical in a blind zone screen application as the execution of the framework is basic at short proximity).

II. EXISTING METHODOLOGY

The proposed system is designed with back camera that activates only when vehicle is in reverse mode. Some cameras are fixed in such a way that it reads the vehicle tires those are travelling in blind zone of our vehicle but the response is too slow in this method.

III. PROPOSED METHODOLOGY

Remote units as delineated in fig.1.The fundamental units are a Sensory framework which is straightforwardly presented to the drain tests from 3cm separation where the reactions of every sensor are seen from the drain surface. The TGS Sensors [10] gathers information tests from the Spoiled crude drain and this information is handled as gas particles. On the off chance that the information of the gas atoms is as (parts per million) to voltage at that point by utilizing the warming components the above information is considered for the further procedure. The warming component is warming according to the convergence of the atoms and it relies upon the particles levels to change over vapor gas as voltage. The voltage esteems are fluctuating ceaselessly as per the convergence of the ruined drain where vapor gas particles are spoken to with parts per million. The TGS sensors are associated with the LPC 2148 IC which introduces the handling of the information esteems as voltages and it is shown by utilizing the LCD Module.

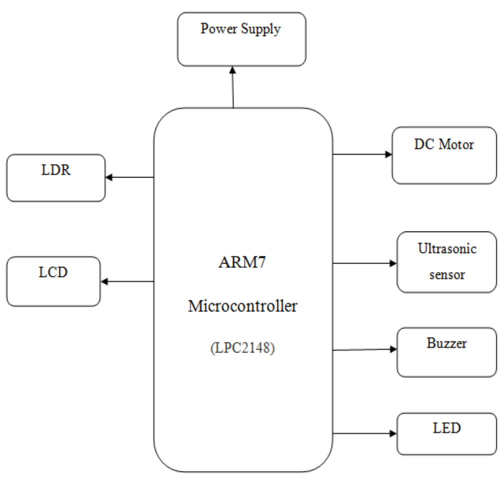

Fig.1.Block diagram.

Advantages:

- High level of safety.
- Provide reliable information on vehicles in the blind zone.
- It is low coast.
- Decline in truckload and car body damages.
- The detection zone and sensitivity can be adjusted to ensure easy and flexible adjustments.

IV. RESULTS

The results are shown in figs.2 and 3.

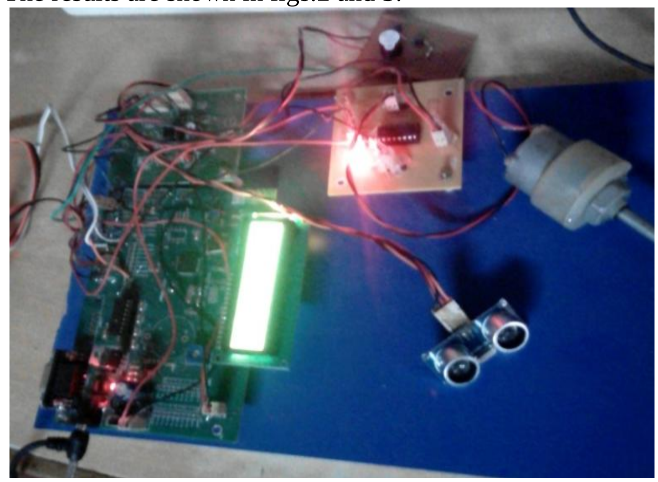

Fig.2. Distance sensing output.

Fig.3. Experimental setup.

V. CONCLUSION AND FUTURE SCOPE

A. Conclusion

The framework of the proposed system was developed for a safety car braking system using ultrasonic sensor and to design a vehicle with less human attention. We detected the signals at a distance of 5 meters using ultrasonic sensor. The system is particularly useful in situation where the vehicles approaching from the rear move into the blind zone, a significant cause of collisions where the combination of ultrasonic sensor and the algorithm provides better safety. This technology supports to implement in aircrafts and submarines.

B. Future Scope

Always automatic brakes cannot be used. So it can be replaced by action of automatic diversion with the help of various sensors such as radar sensors, distance sensors, etc. The stereo multiple camera or fisheye camera has a kind of approach which also enables an assist to further develop the system to be able to detect slowly moving object in a very disturbed environment. There are experiments which are being conducted with challenging on-road datasets. The results displayed are that of a combined approach which outperforms than a feature-based approach in a disturbed environment.

VI. REFERENCES

[1] "Evaluation of lane change collision avoidance systems using the national advanced driving simulator," National Highway Traffic Safety Administration (NHTSA), Washington, DC, USA, 2010. [Online].

[2] "Analysis of lane change crashes and near-crashes" National Highway, Traffic Safety Administration (NHTSA), Washington, DC, USA, 2009. [Online].

[3] "The Royal Society for the Prevention of Accidents—Information on overtaking," Oct. 2009. [Online].

[4] C. Hughes, M. Glavin, E. Jones, and P. Denny, "Wide-angle camera technology for automotive applications: A review," IET Intell. Transp. Syst., vol. 3, no. 1, pp. 19–31, Mar. 2009.

[5] "Euro NCAP rewards page. Outline of Audi Side Assist," Brussels, Belgium, 2010. [Online]. audi_side_assist.aspx

[6] "Blind Spot Warning" Infiniti Technol., Franklin, TN, USA. [Online].

[7] T. Scharwachter, M. Schuler, and U. Franke, "Visual guard rail detection for advanced highway assistance systems," in Proc. IEEE Intell. Veh. Symp., 2014, pp. 900–905.

[8] G. Alessandretti, A. Broggi, and P. Cerri, "Vehicle and guard rail detection using radar and vision data fusion," IEEE Trans. Intell. Transp. Syst., vol. 8, no. 1, pp. 95–105, Mar. 2007.

[9] D. Kellner, M. Barjenbruch, K. Dietmayer, J. Klappstein, and J. Dickmann, "Instantaneous lateral velocity estimation of a vehicle using Doppler radar," in Proc. 16th FUSION, 2013, pp. 877–884.

[10] A. Amditis, N. Floudas, and A. Polychronopoulos, "Lateral motion tracking of automobiles," presented at the 7th International Conference on Information Fusion, Stockholm, Sweden, 2004.

[11] D. Fernandez-Llorca, I. Garcia-Daza, A. Martinez-Hellin, S. Alvarez- Pardo, and M. Sotelo, "Parking assistance system for leaving perpendicular parking lots: Experiments in daytime/nighttime conditions," IEEE Intell. Transp. Syst. Mag., vol. 6, no. 2, pp. 57–68, Summer 2014.

[12] H.-Y. Lin, L.-Q. Chen, Y.-H. Lin, and M.-S. Yu, "Lane departure and front collision warning using a single camera," in Proc. IEEE ISPACS, 2012, pp. 64–69.

[13] Z. Zheng, H. Zhang, B.Wang, and Z. Gao, "Robust traffic sign recognition and tracking for advanced driver assistance systems," in Proc. IEEE 15th Int. ITSC, 2012, pp. 704–709.

[14] Y. Freund and R. E. Schapire, "A decision-theoretic generalization of on-line learning and an application to boosting," J. Comput. Syst. Sci., vol. 55, no. 1, pp. 119–139, Aug. 1997.

[15] M. Mikhisor, G. Wyvill, B. McCane, and S. Mills, "The integral image method for fisheye images," in Proc. 28th Int. Conf. IVCNZ, 2013, pp. 1–6.

[16] Y. Li, M. Zhang, Y. Liu, and Z. Xiong, "Fish-eye distortion correction based on midpoint circle algorithm," in Proc. IEEE Int. Conf. SMC, 2012, pp. 2224–2228.

[17] K. Daniilidis, A. Makadia, and T. Bulow, "Image processing in catadioptric planes: Spatiotemporal derivatives and optical flow computation," in Proc. 3rd Workshop Omnidirectional Vis., 2002, pp. 3–10.

[18] Z. Sun, G. Bebis, and R. Miller, "On-road vehicle detection: A review," IEEE Trans. Pattern Anal. Mach. Intell., vol. 28, no. 5, pp. 694–711, May 2006.