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The Hands Free Driven Car

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***Abstract*: All of us would like to drive our car with a mobile held in our hand, talking to other person. But we should be careful that our car should not met with an accident. Here comes the new technology. "The Hand free drives car" by utilizing the modern technology in Robotics.**

***Keywords*: Throttle, Target selection algorithms, Yaw rate.**

1. Introduction

All around the world 45% of the accidents occurs by the mistake of the driver. In USA, the highways are so crowded which led to serious accidents. Most of the victims of such accidents are either severely injured or even lost their life. This was the main reason, behind this project put forward by the Delphi- Delco- electronic system and general motors corporation. This is called automotive Collision avoidance system (ACAS).

2. ACAS (Automatic Collision Avoidance System)

It is assembled with the goal of developing a comprehensive FCW system that is integrated into the vehicle infrastructure. The FCW system incorporates ACC and rear ends CW functionally. All will be operated when engaged by the drives. While FCW provide full time operating functionality where ever the vehicle is in use.

- *Development:* It mainly focused on a variety of activities like enhancement, improvement and maturation processes to existing FCW technology.
- *Integration:* The refined FCW is integrated into the vehicle infrastructure.

Table 1
Phases

Phase 1	Development	Enhancement
Phase 2	Integration	Vehicle Infrastructure
Phase 3	Deployment Fleet	Experimenting
Phase 4	Field Operational Test	Public Awareness
Phase 5	Implementation	Product Analysis

3. FCW (Forward Collision Warning System)

It includes a forward looking radar sensing system. It is a mechanically scanning 764 Hz long range radar sensor to detect objects up to 150 meters or 402 feet ahead. Thus the system reduces the need for drivers to adjust speed when encountering traffic.

4. Vision based prediction

The goal of forward vision sensor is to facilitate the development of robust, real-time forward looking tracking system for forward path estimation and Target selection algorithms. It has 2 components,

a) Video camera which is mounted behind the windshield of vehicle to acquire images of roadways ahead of host.
b) The image processing unit then detect and track position of the lane boundaries in the images.

5. Map based path detection

Path prediction can be achieved by establishing the location of the vehicle on the road, matching the vehicle location to a point on the road, tracking the path traversed by the vehicle and extrouting the geometry from the map. This is achieved using the sensor i.e., DGPS, dead reckoning and a digitized road map. DGPS is used to compute the distance traversed by the vehicle. For more accuracy, the distance is computed relative to the previous position of the host vehicle. The combination of dead reckoning and DGPs with the road map provide fairly accurate path prediction.

6. GPS (Global Positioning System)

Most important part of ACC system is digitized GPS. They allow users to determine their location anywhere in the world at any time. It used 24 satellites to establish the position of the individual user. GPS unit receives data from satellites and interprets the data providing information on longitude, latitude and altitude. It also provides information on velocity, direction and track of movement. To be truly useful, this information must be integrated with a Geographic Information System(GIs), which has the map of the community and translates the longitude and latitude into address.

7. Benefits of ACC

- Manager vehicle speed and headway gap.
- Makes cruise control in traffic conditions providing refaced driving experience.
- Operates under wide range of environmental conditions.

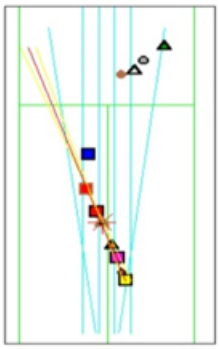

Fig. 1. Distributed object detection

Fig. 2. Vision based camera

Fig. 3. Forward looking radar

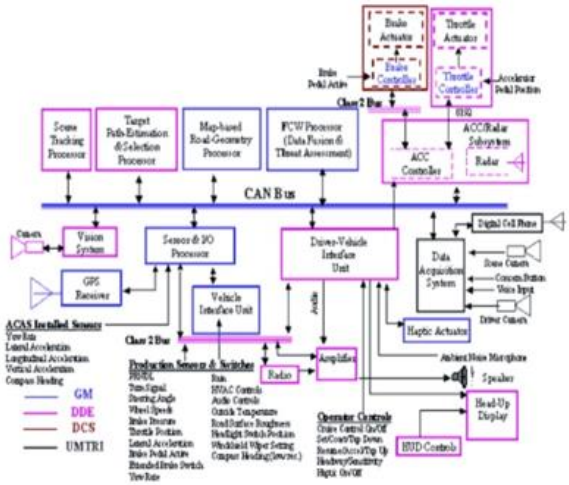

Fig. 4. ACC

8. Conclusion

This paper presented an overview on hands free driven car.

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