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# A REVIEW ON AUTONOMOUS VEHICLES

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**ABSTRACT --** Autonomous cars are the future smart cars anticipated to be driver less, efficient and crash keeping away from ideal metropolitan vehicle representing things to come. To arrive at this objective automakers have begun working around here to understood the potential and tackle the moves right now around here to arrive at the normal result. In such manner the principal challenge is modify and guzzle existing innovation in regular vehicle to make an interpretation of them to a close to anticipated independent vehicle. This change of customary vehicles into an independent vehicle by taking on and executing different forthcoming advancements is examined in this paper. This incorporates the goals of independent vehicles and their execution challenges. The paper additionally addresses the current standards for the same and compares the introduction of autonomous vehicles in Indian market in comparison to other markets. There after the acceptance approach in Indian market scenarios is discussed for autonomous vehicles.

***Keywords***— Perception, Sensor Fusion, Localization, Encoder, Decoder.

## 1. INTRODUCTION

A fully autonomous vehicle can be defined as a car which is able to perceive its environment, decide which route to take to its destination, and drive it. In other words we can say autonomous vehicles are smart cars or robocars which uses a variety of sensors, computer processors,and data bases such as maps to take over some or all of the functions of driving from human operators. Cars equipped with this technology will have its own benefits. It will likely reduce crashes, energy consumption, and considerably pollution. Recently major OEM's has announced their plans to begin selling such vehicles in a few years from now.

With the growing needs of convenience, technology now tries to seek automation in every aspect possible. Also, with the growth in the number of accident in the recent years due to increased number of vehicles and some amount of carelessness of the drivers, it now seems necessary to seek automation in vehicles as well. Hence to achieve the merit above mentioned problems, we present an autonomously drive car which would eradicate human intervention in the field of driving.

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## III. LITERATURE SURVEY

With advancement in technology the duo of Johann Borenstein and Yoram koren avoidance in May 1988, implemented the autonomous car with obstacle avoidance ultrasonic sensors.

A mobile robot system, capable of performing various tasks for the physically disabled, has been developed. To avoid collision with unexpected obstacles, the mobile robot uses ultrasonic range finders for detection and mapping. The obstacle avoidance strategy used for this robot is described. Since this strategy depends heavily on the performance of the ultrasonic range finder.

Pi ,Gurjashan pannu ,

Mohammad Dawud Ansari,

Pritha Gupta. Put forward an idea in March-2015 They build a monocular vision autonomous car prototype using Raspberry Pi as a processing chip. An HD camera along with an ultrasonic sensor is used to provide necessary data from the real world to the car. The car is capable of reaching the given destination safely and intelligently thus avoiding the risk of human errors. Many existing algorithms like lane detection, obstacle detection are combined together to provide the necessary control to the car.

In June 2018, AbdulKaderJoukhadar,
Hazen Issa and
Yaman Kalaji,

Designed and implement auto car driving system with collision avoidance.
They proposed robotic-driver system has two working modes. The first mode is used when people want to control the vehicle remotely; an application installed on Android smartphone sends control signals via UDP to the onboard Cubieboard2 wirelessly. The Cubieboard2 and the smartphone are connected via WIFI through the onboard access point, the single-board computer Cubieboard2 receives the UDP signals and makes the proper output to GPIO pins, allowing full control of car's braking, acceleration, and steering.

The second mode is the autonomous mode, which makes the vehicle capable of following a pre- determent path and avoid collision without human intervention. A camera placed at vehicle's bumpers sends a direct feed to onboard PC, then the image recognition software detects the centre line of the lane and calculates the amount of error to send the proper commands to the steering system. In addition, ultrasonic sensors placed at vehicle's bumpers scan the lane region plane

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Design and implementation of self-driving car was carried out by Mahmoud Fathy, Nada Ashraf, Omar Ismail , Sarah Fouad inJanuary-2020
Self-driving technology in general is becoming increasingly common and could revolutionize ourtransportation system. Also, self-driving cars are on their way of being legal, but they still are not trusted enough to be used in real life due to a lack of their safety. In this paper, a self-driving car prototype is proposed which integrates between different technologies including some algorithms which are Road lane detection algorithm, disparity map algorithm to detect the distance between the car and other vehicles, and Anomalies detection using Support Vector Machine classification algorithm as it achieved a very high accuracy using our data set. To test the car prototype, a special road environment was built to fit the car. Using the disparity map algorithm and merging between these algorithms will result in achieving safety and reliability for the self-driving technology.

## III. METHODOLOGY

Autonomous cars rely on sensors, actuators, complex algorithms, machine learning systems, and powerful processors to execute software.

Autonomous cars create and maintain a map of their surroundings based on a variety of sensors situated in different parts of the vehicle. Radar sensors monitor the position of nearby vehicles. Video cameras detect traffic lights, read road signs, track other vehicles, and look for pedestrians.

sensors bounce pulses of light off the car's surroundings to measure distances, detect road edges, and identify lane markings. Ultrasonic sensors in the wheels detect curbs and other vehicles when parking.

Sophisticated software then processes all this sensory input, plots a path, and sends instructions to the car's actuators, which control acceleration, braking, and steering. Hard-coded rules, obstacle avoidance algorithms, predictive modeling, and object recognition help the software follow traffic rules and navigateobstacles.

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### 3.1 Block Diagram

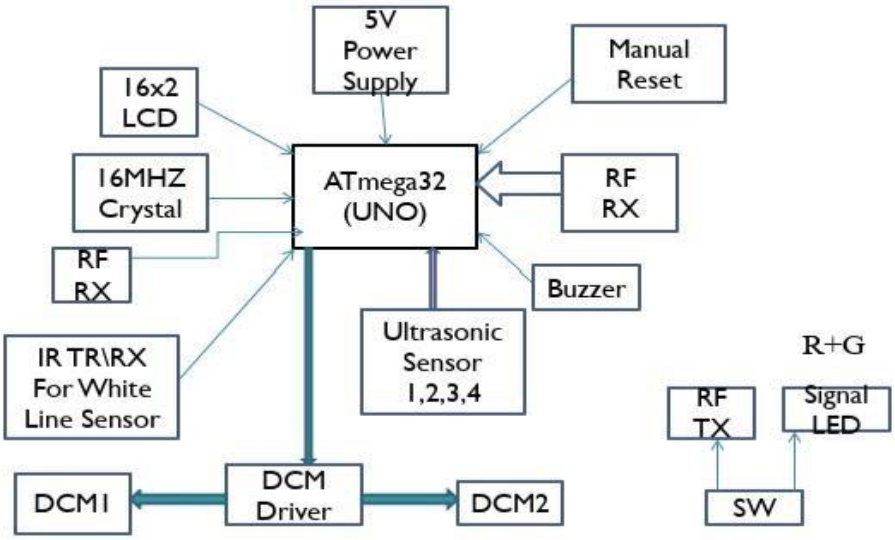


Fig.1 Block Diagram

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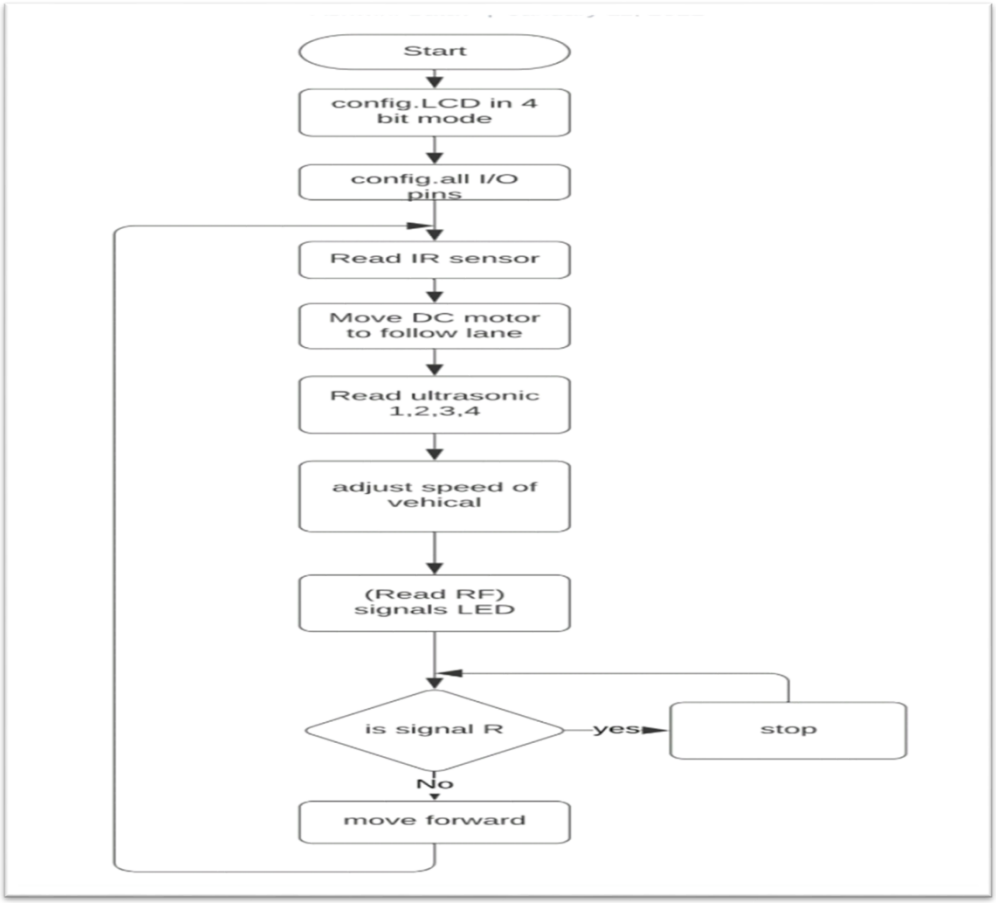
### 3.2 Flow Chart



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### 3.3 Circuit Diagram

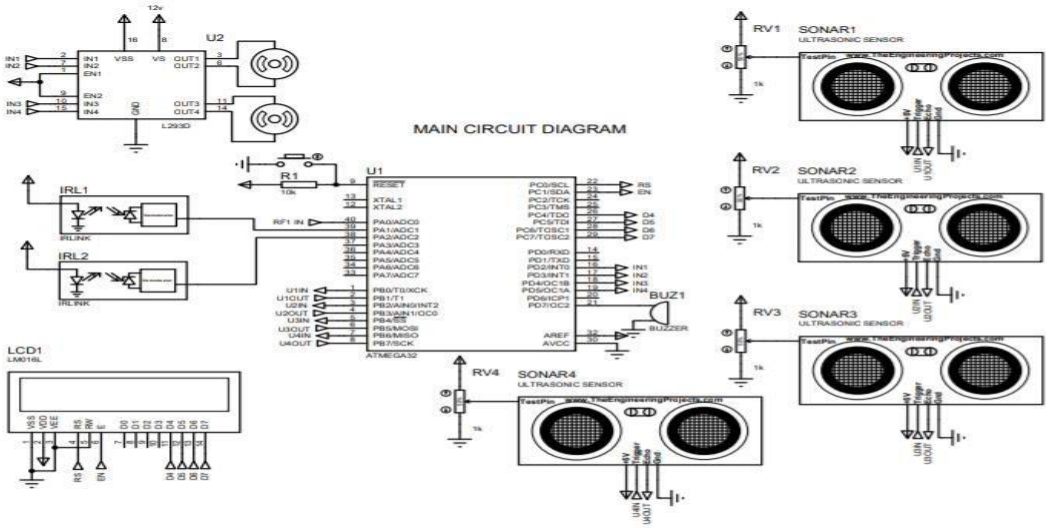


Fig 2. Circuit Diagram

## IV. CONCLUSION

The autonomous car would surely prove out to be a boon in the automation industry and would be preferred over many traditional techniques. They could be used for patrolling and capturing the images of the offender. As they won't require any drivers, the accidents caused by the carelessness of the goods carrier vehicles would be reduced and would ensure better logistic flow. Buses for public transport would be more regulated due to minimal errors. Hence, due to greater autonomous nature and efficiency, autonomous car of this nature canbe practical and is highly beneficial for better regulation in the goods and people movers section.

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