

Vehicle Overload Detection System

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Abstract - With the rapid growth of the market economy, the volume of export and import by road transportation has increased. At the same time, the distribution of supplies is increasing because of the daily demand of the people. As a result, truck loads have increased and truck accidents are on the rise. Even though there are numerous methods to measure the truck's goods including those like weighing bridge, strip sensors, industrial load sensors etc., Accuracy in these techniques are questionable. So, this project gives an optimal solution for measuring truck's goods weight loading capacity alone. The accuracy in measurement is met by the use of load cell involving Arduino Uno microcontroller. By this technology, tries to avoid vehicle accidents and material damage.

1.INTRODUCTION

In this project, modern tool used is automatically monitors the load weight in the truck alone. It is designed by using load cell and Arduino Uno Micro Controller. It also displays the current goods weight in the dash board. In combination, it alerts the particular person who is the in-charge of the truck by sending an SMS.

In this system, the weight of the goods in the truck can be accurately dash boarded after the load sensor is placed in the area of the suspension or shock absorber.

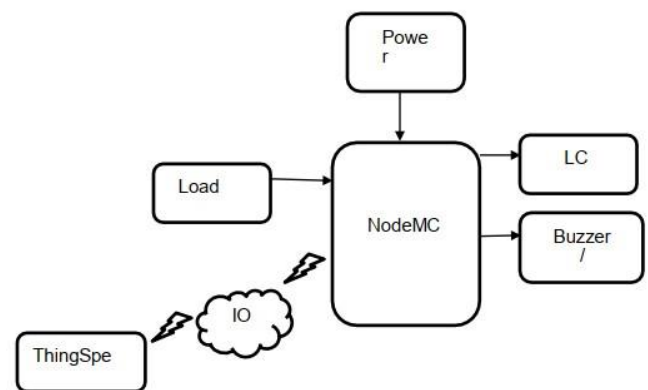
With the combined use of Arduino Uno and Load sensor, the work of weighing process can be perfectly described. When the truck is loading with goods, it shows the detected weight of the load in dashboard. If the truck is loaded with maximum goods which exceeds the trucks loading capacity, it will indicate in dashboard with buzzer indication and also send a message to the owner by using GSM module.

2. Body of Paper

This system proposes the dynamic method for estimation of truck load weight based on the compression of suspension. Conventional method for estimation of truck load weight depends on the weighing stations which are regularly introduced close to the highways. The present framework has a genuine burden that the truck must be conveyed to the weighing station every time to quantify the load which causes wastage of time and it additionally includes false estimation of weight. The proposed technique beats these downsides with the use of sensors and GSM module. This framework utilizes ultrasonic sensors for dynamic estimation of load weight. These sensors are appended to the base of the truck's holder. At the point when the truck is stacked, the heaviness of the load causes compression of suspension of the truck because of this there is variation in distance delivered by ultrasonic sensors. The

normal estimation of the distances obtained by different ultrasonic sensors are taken to calculate the weight.

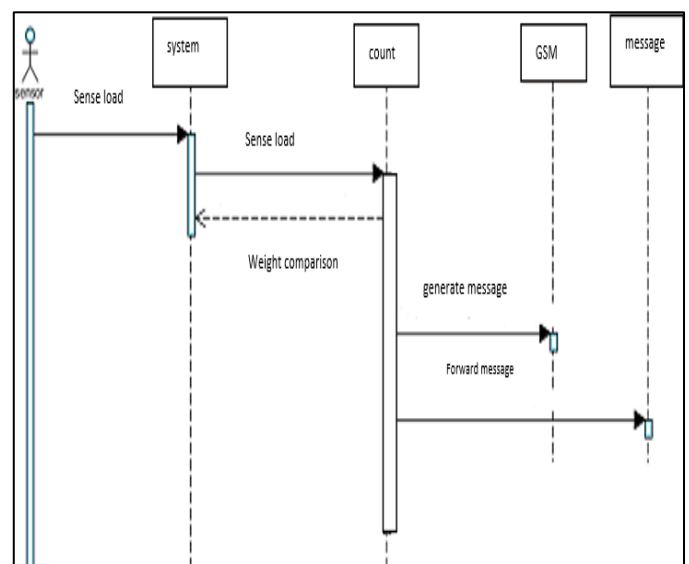
Fig. Block Diagram



Sequence diagram

A sequence diagram simply depicts interaction between objects in a sequential order i.e. the order in which these interactions take place. One can also use the terms event diagrams or event scenarios to refer to a sequence diagram.

Sequence diagram consist of 4 objects i.e. System, Count, GSM and Message. Sensor will sense the load of the vehicle, and then will provide the weight(count) of the vehicle to the display screen of the system. Then the GSM will generate a message for the vehicle user about whether the system is overloaded or not.



3. CONCLUSIONS

The Arduino based automatic truck load monitoring system is implemented. The load sensor measures the goods weight and sends the value to the Arduino by using HX711 Module. GSM module is used for communication and location purpose respectively. Due to overloading they gain extra money but the safety of the driver cannot be assured so to avoid accident and to reduce the unethical activities.

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