

AUTOMATIC HEIGHT ADJUSTABLE SPEED BUMP

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Abstract

An intelligent bump system incorporated with the speed detection and dynamic license plate recognition techniques. Based on the speed and detection of the car, the idea is to assess the enforcement of the speed bump. The proposed technique makes driving safer and more relaxed as part of intelligent transport networks to provide traffic flow control. Adaptive tracking is carried out for license plate allocation in the dynamic license plate recognition stage, followed by character segmentation and identification. "Tesseract OCR" is then used to create sample images and carry out the task of character recognition. To demonstrate the feasibility of this job, the experiments are performed on a prototype device with embedded computation.

Keywords: Accident, Roadway, Speed bump, Transportation, Vehicles.

I. INTRODUCTION

Heavy vehicular traffic on urban streets has increased the importance of traffic calming to improve the safety and livability within neighborhoods. A livable community is one that provides safe and convenient transportation choices to all citizens, whether the travel mode is walking, bicycling, transit, or driving. The Federal Highway Administration (FHWA) Livability Program of the U.S department of Transportation highlights the value of its notion in the Transportation and Safety Factsheet, which states that most roadways have been mainly built for safer car and truck travel over the past 50 years, may have made them less safe for pedestrians, particularly older adults, children and people with disabilities, or bicyclists. Consequently, persons that do not drive or have access to private cars, such as children and older people, have been disproportionately represented on U.S. roads in accidental deaths[1].

The Institute of Transportation Engineers (ITE) defines site visitors calming as ‘the aggregate of especially bodily measures that reduce the bad effects of motor automobile use, adjust driving force behavior and improve situations for non-motorized avenue customers’. (Lockwood 1997) As shown within the following sections, traffic calming reduces site visitor’s crashes, will increase the safety and convenience for pedestrians and other non-motorists, makes neighborhoods safer for youngsters to play and gets rid of noise and pollutants. This thesis studies the utility of velocity bumps as an effective traffic calming degree and proposes trade designs to remedy or mitigate troubles with the prevailing layout. Amongst other measures that contribute to improving pedestrian safety, such as visitor’s alerts and stop signs,

the setup of velocity bumps has also been traditionally used, and as glaring from a number of the research included in further sections, additionally has been pretty powerful. Site visitors lighting fixtures or prevent signs aren't self-enforcing, whereas speed bumps are continually enforced[2]. Drivers may accelerate to pass through an intersection earlier than the site visitors mild's indication adjustments, or may also forget about a forestall sign, which ends up in hazardous street conditions. instead of traffic alerts or prevent signs and symptoms, speed bumps no longer need enforcement to be effective. Besides, prevent signs and alerts are installed by and large at intersections, unless high pedestrian traffic at mid-block crossing warrants set up of site visitors sign. Speed bumps are frequently used at non-intersection places[3]. The national toll road site visitors safety administration 'visitors safety statistics' shows that almost four-fifths of pedestrian fatalities in 2010 took place at non intersections as opposed to at intersections. However, velocity bumps penalize even the law abiding drivers who are driving within the pace limit. Traffic calming measures involve physically altering the road layout or appearance for slowing down or reducing motor-vehicle traffic as well as to improve safety for pedestrians and cyclists (Hass-Klau 1985). The goal of traffic calming is to reduce vehicle speeds (and in some cases, volume, too), improving safety, and enhancing quality of life.

Speed bump is broadly be classified into the subsequent 4 classes:

1. Narrowing streets/lanes: Narrowing visitors lanes differs from other avenue remedies with the aid of making slower speeds appear extra herbal to drivers and much less of an artificial imposition rather than maximum different treatments, which physically force decrease speeds or limit course desire. Such way consists of:

- a. Narrower visitor's lanes — streets can be narrowed by means of extending the sidewalk, adding bollards or planters, or including a bike lane or on-avenue parking.
- b. minimize extensions (additionally known as bulb-outs) that slender the width of the roadway at pedestrian crossings.
- C. Chokers, which are curb extensions that narrow the roadway to a single lane at points.
- d. Allowing parking on one or both sides of a street to reduce the number of driving lanes.
- e. Pedestrian refuges or small islands in the middle of the street.
- f. Converting one-way streets into two-way streets[4].

2. Vertical deflection: This entails growing a vertical deflection in the roadway. This includes:

- a. velocity bumps, which may sometimes be cut up to keep away from inflicting delay to emergency vehicles. Pace bumps are about 2 to 4 inches high and 8 to twelve inches wide.
- b. speed cushions, two or three small speed humps sitting in a line across the street that gradual cars down but permits (wider) emergency motors to straddle them in order now not to gradual emergency reaction time. Pace humps comparatively a lot wider than speed bumps, this is, about a few feet wide. Those can also be trapezoidal in form.

c. pace tables, lengthy flat-topped velocity humps that slow vehicles greater regularly than humps. Speed tables are even wider than humps, that is, about 20 toes huge.

d. Raised pedestrian crossings, which act as pace tables, regularly situated at intersections[5].

3. Horizontal deflection, i.e. make the automobile swerve barely. This consists of:

a. Chicanes, which create a horizontal deflection that causes vehicles to gradual as they would for a curve.

b. Pedestrian refuges once more can offer horizontal deflection, as can diminish extensions and chokers[6].

4. Block or restrict access. Such traffic calming means include:

a. Median diverters to prevent left turns or through movements into a residential area.

b. Converting an intersection into a cul-de-sac or dead end.

c. Boom barrier, restricting through traffic to authorized vehicles only.

d. Closing of streets to create pedestrian zones[7].

An IoT device has many functions, together with a diffusion of fields, customized layout, automated processing and intuitive functions, without the overall human control and easy to use and replace. In recent years, shrewd systems with the net of factors (IoT) development have been increasingly popular and widely used in diverse packages. One critical element is the connectivity and mobility for the mission execution. In this work, we endorse a smart traffic management approach primarily based on the IoT concept. The goal is to increase a vision enabled mechanical gadget as part of transportation infrastructure. For pedestrian or driving safety functions, a visitors facility called “velocity bump” is generally hooked up on some avenue sections which include inside the neighborhood of hospitals, colleges, parking plenty, or precise intersections. It's far used to remind the drivers to pay greater interest to the encircling region and gradual right down to prevent site visitor's injuries. But, the velocity bumps have many drawbacks underneath positive circumstances. For example, the ones mounted near a sanatorium may additionally boom the pain of patients, and likely delay the first-resource time. In extra standard situations, the velocity bumps still make the driver and passengers uncomfortable even though the automobile is low using velocity. As a result, it's far ideal to have a mechanism to selectively put in force the speed bump deceleration in line with the information of the incoming cars[8].

To identify a vehicle, a commonly adopted method is based on the recognition of its license plate. The related research is one of the most important topics and has been extensively studied in the intelligent transportation systems in recent years; many facilities have physically used license plate recognition methods, such as small-scale private parking systems and large-scale electronic toll collection systems (ETCs). Other validation approaches based on active sensing technologies also exist, except for the use of license plate details. RFID is a standard technique and, under varying weather and lighting conditions, is normally robust. However, RFID tags need to be carried with the vehicles for identification in addition to the installation of the

sensing systems. A modified speed bump system that can momentarily disable the road bump to prevent a crash and uncomfortable driving. The speed bump will change automatically for registered vehicles based on the license plate recognition outcome and the demand from a database. In addition, vehicles with an appropriate driving speed can also be dealt with. To measure the vehicle speed for road bump compliance activation, the trigger time difference between two pressure sensors with a known distance on the ground is used. Experiments are done with license plate recognition of the photographs of the real scene[9].

II. CONCLUSION & DISCUSSION

The life of every patient is more important. Life can be made safe according to the time at which the patient reaches the hospital. The speed breaker makes the ambulance to reduce the speed but this proposed system of flat speed breaker plays the main role in safeguarding the human lives by making the speed breaker flat. The transportation for the ambulance is better and comfortable. In future, this system will be implemented in most of the emergency ways where the ambulance has to reach quickly. It helps in the effective teaching of a hospital. The easiest and traditional way to control the traffic is calming devices, which are well known as vehicle speed reducers, and these calming devices used to avoid accidents. Basically two types of speed breaker vertical as well as horizontal are used around the world to reduce speeds at acceptable levels for the execution of laws with ease. Some faulty designed and abnormal speed breakers also cause various accidents hence these speed breakers always in the limelight of objections but today the world is moving towards intelligent speed breakers which could be safe and more environmentally friendly as compared to traditional speed breakers. This review article has investigated the smart and modern speed breakers around the world.

III. REFERENCES

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