Project Review-3

On

Advanced automatic toll collection and vehicle detection during collision Using IOT

By

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INDEX

ABSTRACT

Automatic process of toll collection will save time, effort, and man power.In this work we are proposing a low cost and efficient technique called Electronic Toll Collection using RFID modules that automatically collects the toll from moving vehicles when they cross the toll plaza. We will also detect Stolen Vehicle based on wireless communication to send SMS to the owner of the vehicle also send GPS of his vehicle and store details on IOT web-page .We will also implement alcohol detector and blinking eyes sensor to avoid accidents happening on highways .So if the driver is drunk or sleepy the toll will not be open. We are expecting to control the traffic occurring near toll plazas and signals, accidents on highways, detecting stolen vehicles and tracking those vehicle, save the data of vehicles in IOT web server page.

OBJECTIVE

- The main objective is to detect the stolen vehicle Problem faced at toll plaza control accidents on highway.
- To propose a low cost and efficient technique called E -Toll Collection using RFID modules that automatically collects the toll from moving vehicles when they cross the toll plaza.

PROBLEM STATEMENT

Vehicle theft is one of the major problems in present situations.Many car manufacturing companies do no provide GPS based tracking system to every car model. So targeting these cars we provide after market tracker system for the car providing the GPS location to the user.A sleep detector which alerts the driver based on eye blinks and alcohol detector at the toll plaza which prevents the car from crossing the toll booth during the toll payment.The traffic at the toll plaza at this point of time is to be controlled by the management.

LITERATURE SURVEY

S.NO	TOPIC	ABSTRACT	AUTHOR	YEAR
1	DwaRa: A Deep Learning-based Dynamic Toll Pricing Scheme for Intelligent Transportation Systems	propose a novel spatially induced-longshort term memory (SI-LSTM) model to predict current traffic and weather based on historical repositories. Second, based on inputs by the Markov model, SI-LSTM, lane type, and vehicle type, a dynamic pricing algorithm is presented to improve the quality of experience (QoE) of the VO. Finally, based on dynamic price fixation between the VO and the GA, smart contracts (SCs) are executed and transactional data is secured through BC. The proposed scheme is compared against parameters like average mean-squared error (MSE), predicted traffic, scalability, interplanetary file system (IPFS) storage, computation (CC), and communication cost (CCM). At n= 100 test samples, and arrival rate β= 80, the obtained MSE is 0.0012, with a peak average value of 0.00526	Arpit Shukla, Pronaya Bhattacharya, Sudeep Tanwar, Member, IEEE, Neeraj Kumar, Senior Member, IEEE, Mohsen Guizani,	2020

LITERATURE SURVEY

S.NO	TOPIC	ABSTRACT	AUTHOR	YEAR
2	Freeway Travel Time Prediction using Deep Hybrid Model – Taking Sun Yat-sen Freeway as an Example	In this research, we propose a vehicle travel time prediction model for freeway traffic. The data used in this research are derived from the traffic dataset of the Taiwan Freeway Bureau, and the travel time prediction is made for the Sun Yat-sen Freeway between Taipei and Hsinchu. First, the missing value of the raw data is imputed by Autoencoder. The data are then segmented according to time series and are used to build the prediction model. To effectively capture the hidden features required to predict the travel time for the vehicle traveling on the freeway,	Pei-Ya Ting, Tomotaka Wada, Senior Member, IEEE Yi-Lun Chiu, Min-Te Sun, Member, IEEE, Kazuya Sakai, Member, IEEE, Wei-Shinn Ku, Senior Member, IEEE Andy An-Kai Jeng and Jing-Shyang Hwu	2020

LITERATURE SURVEY

S.NO	TOPIC	ABSTRACT	AUTHOR	YEAR
3	Quantitative Assessment on Truck-Related Road Risk for the Safety Control via Truck Flow Estimation of Various Types	The proposed prediction of the road risk is tested in the randomly selected road segment and shows superior compared to other methods. This could promote road safety in the development of intelligent transport system (ITS).	YINLI JIN1,2, ZHEN JIA 1,2, PING WANG 1,2, (Member, IEEE), ZHU SUN1,3, KAIGE WEN1,2, AND JUN WANG	2019

LITERATURE SURVEY

S.NO	TOPIC	ABSTRACT	AUTHOR	YEAR
4	Improved Manpower Planning Based on Traffic Flow Forecast Using a Historical Queuing Model	The proposed method is tested on a randomly selected toll gate in a real scenario as an example. A manpower planning strategy is verified with scheduled number of operating toll lanes. The improved manpower planning shows that the proposed method effectively reduces manpower by 40% at the toll gate and saves 67.5 working hours in one week compared with the current schedule. The successful application of the manpower planning method can be extended to other toll gates and service plazas to save manpower for more efficient and intelligent operation manner.	YINLI JIN 12, YIWEN GAO12, PING WANG12, JUN WANG3 , and LEI WANG3	2019

LITERATURE SURVEY

S.NO	TOPIC	ABSTRACT	AUTHOR	YEAR
5	Forecasting Traffic Volume at a Designated Cross-section Location on a Freeway from Large-regional Toll Collection Data	All these proposed methods are evaluated with a collection of toll data for one month covering more than 5000 km of freeway under a centralized regional charging system. One location is randomly selected as the designated cross-section at 2 km from the upstream toll gate on a road segment of the Xi'an ring. The experimental results show the effectiveness and satisfactory accuracy of predicting the traffic volume in the designated cross-section compared to the data captured by the traffic video detection equipment	Ping Wang1 2* , Wanrong Xu1 2 , Yinli Jin1 2, Jun Wang3 , Li Li1 2 , Qingchang Lu1 2, and Guiping Wang	2018

Realistic Constraints-

- It works under any temperature.
- In this work propose a low cost and efficient technique called Electronic Toll Collection using RFID modules.
- We detect Stolen Vehicle based on wireless communication to send SMS and IOT webpage and also find the location of the vehicle..
- Using sensors to detect the condition of the driver.

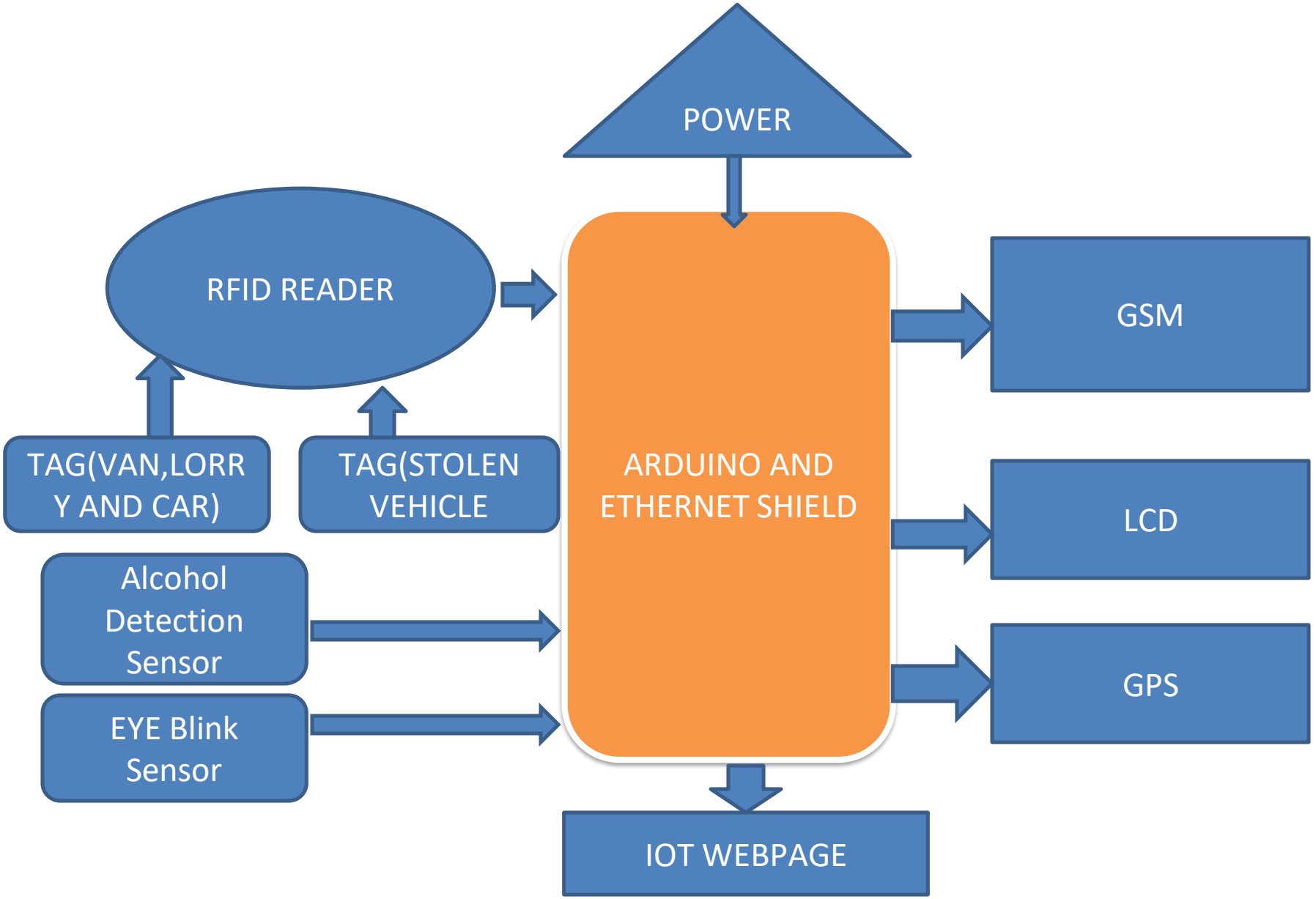
NOVELTY

- Implemented eye blinking sensor module.
- Implemented MQ3 sensor module to detect whether the driver drunken or not.
- Implemented RISC mechanism to detect the stolen vehicle.
- Implemented GPS module to track the vehicle location.

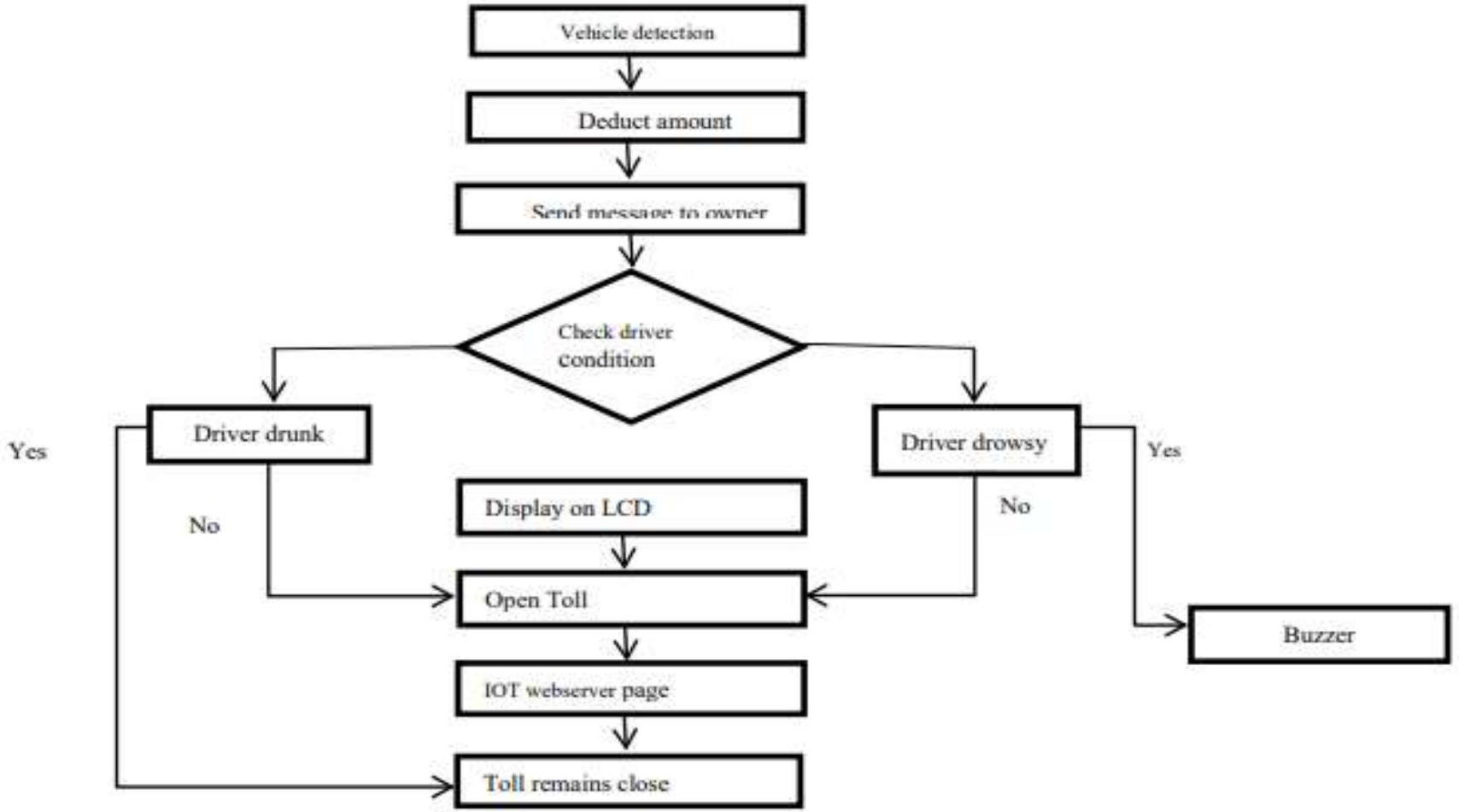
PROPOSED SYSTEM

- We need a system for handling violation and acknowledgement when a vehicle does not have an RFID module installed, a vehicle's ID number is not found in the database, or a driver has insufficient funds to pay toll.
- If an acknowledgement is not received in a predefined time from the database, the toll plaza gate remains closed.
- In this we used in RISC Mechanism.
- To detect Stolen Vehicle and Intimate SMS also
- In this proposed system Arduino Ethernet Shield is Used to Monitor IOT Webpage.
- MQ3 sensor module is used for detecting wether the driver consumed alcohol or not.
- Blinking eye sensor module is used for counting the no of times the person eyes are blinking per second and know wether drowsy or not.
- GSM module to send messages to the car owner about the transactions he made at each toll.
- GPS modulo to track the car if the car is stolen .If it's a stolen car it will send the latitude and longitude of the car to the owner.
- IOT web server module to store the data on online page and also able to access by anyone.

METHODOLOGY



Flow chart


Vehicle detection
Deduct amount
Send message to owner
Check driver condition
Driver drunk
Yes
No
Driver drowsy
Yes
No
Display on LCD
Open Toll
Buzzer
IOT webserver page
Toll remains close

Requirements

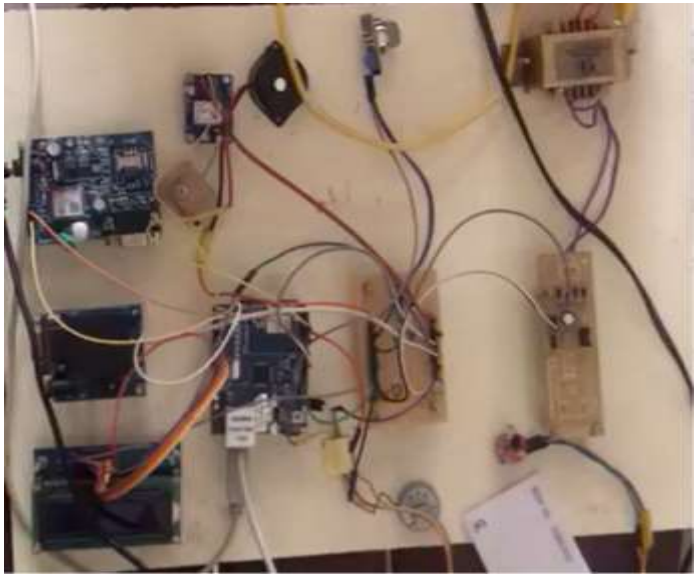
Software used:

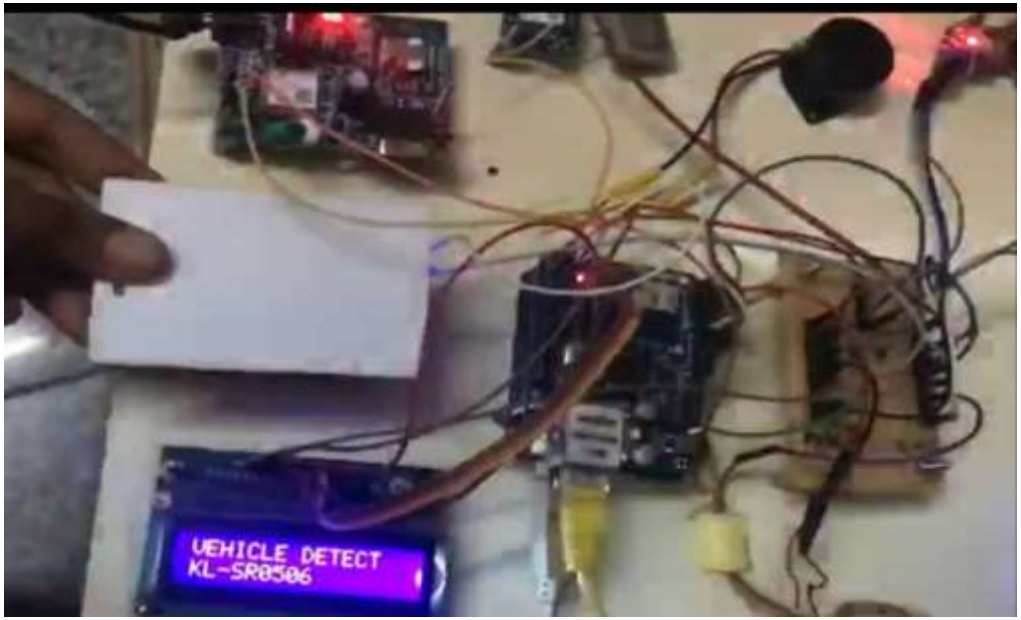
- ARDUINO IDE
- EMBEDDED c

Hardware Components:

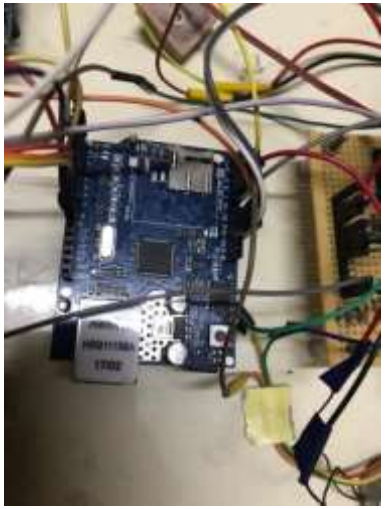
- Arduino Microcontroller
- LCD
- RFID Reader
- TAG
- ARDUINO ETHERNET SHIELD
- GSM
- GPS
- MQ2sensor
- Eye blink sensor

RESULT

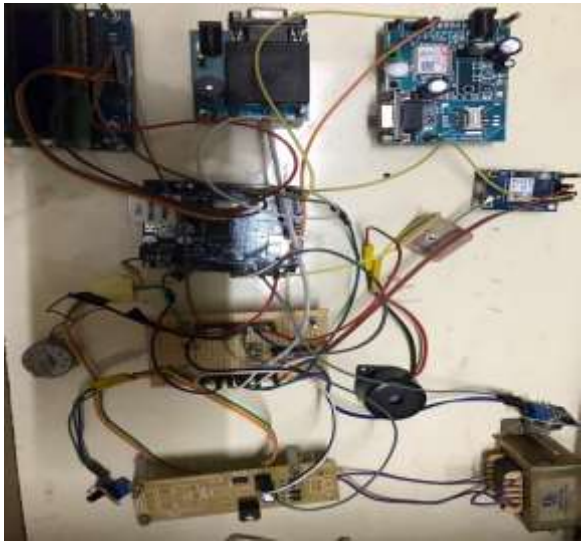




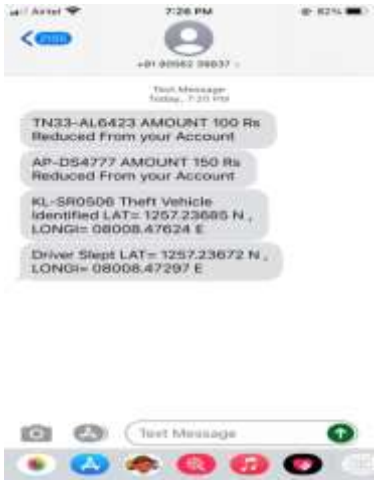
Alcohol module



splitters



Arduino and ethernet



RESULT

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TIME LINE

- Zeroth Review - 1. Project Title
  2. Abstract
  3. Motivation of project

- Review 1 - 1. Explained about methodology and literature survey
  2.Modules designed

- Review 2 - 1.Coding part
  2.Hardware Connections
- Review 3 - 1.Implemented coding
  2.Final output

CONCLUSION

The Automatic toll based vehicle monitoring system in i expressway based on RFID, a design scheme was put forward. It is low cost, high security, far communication and efficiency. This system of collecting tolls is eco friendly and also results in increased toll lane capacity.

REFERENCE

- YINLI JIN , YIWEN GAO, PING WANG, JUN WANG, and LEI WANG,"Improved Manpower Planning Based on Traffic Flow Forecast Using a Historical Queuing Model",IEEE 2020

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