Predelivery Notification and Sorting System In Mail Service

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Abstract- *In recent times, every important document that is to be send is delivered by mail (courier) service system. So the system must be integrated from physical and logical perspective resulting in enhanced functionality. Many softwares are installed to make the service superior. In this project field of mail service, we proposed a system which possess a GSM technology which sends a predelivery notification to the consumer to make aware about their courier before dispatching it. Also includes the tracking system to determine the current position of vehicles carrying couriers with a navigation system installed which facilitates other things like improved courier security, increased equipment utilization, effective allocation of delivery of couriers, decreased asset losses and quick availability of help or repair if in need. This real time location can be viewed on web server by consumer. This system contains LPC2138 microcontroller connected with GPS and GSM which is installed in vehicle. During motion of vehicle, its updated location is continuously reported to a server. This location information will be plotted on the monitoring device using Google Maps. It is implemented using AT commands with HTTP function at backend.*

Keywords- Courier Service, GSM , GPS, tracking system, HTTP function

I. INTRODUCTION

All courier companies all over the world have responsibilities to provide delivery services to their customers.Courier service agents include FedEx ,DHL,TNT, NIPOST, Express Delivery, Speed Post, United Parcel Services-UPS and others too numerous to mention. The main function of these courier service agents are to transfer couriers from one location to another in order to meet up with our day-to-day economy and to also ensure security.

On the way of transportation of these couriers, unforeseen events could sometimes occur which could lead to the loss of business transactions or there could be an attempt to violation or stealing of the transported items. This raises serious issues of concern for a way to monitor the transition of vehicles, trunks, ships from the courier service providers to

their destination in good and safe condition, and to avoid these condition. There should also be a way to track down couriers, and even trucks or vehicles carrying goods for delivery in any particular location on the earth. To the other end, a monitoring system needs to be developed to handle these routines in a more effective manner.

In this paper, a system is been proposed having GSM(Global System for Mobile Communication) technology which sends a pre-message to the consumer notifying them about their dispatched courier which gives them an idea about in what time they will receive it. An another system, GPS(Global Positioning System) is used with GSM which is used to monitor and track the courier carrying vehicle that are been transported. Wherever the vehicle goes, whether it operates regionally or nationally ,this tracking service system will provide pin-point location, snail trail facilities and a communication platform in one complete solution, while improve performance and reduce costs.

After getting the real time location, there is an issue about how to keep the consumer updated about their couriers. In recent courier services, when a courier is been dispatched from a local office after their unique ID number tag is been read by the reader ,this courier will show the same position until it reaches to the other local office and the tag is been read and then it gets updated. So in this process we cannot get information about the journey between source to destination. In this paper, this difficulty is been overcome by using http function, using which we can get continuously updated location on web server via Google maps.

II. LITERATURE REVIEW

Naresh Vurukonda, Dr.B.Thirumala Rao and Dr.N.Sambasiva Rao[1] proposed a paper which aims in providing a very reliable and very user friendly solution to overcome the problem off tracking the mails. As we know the advancements in the Radio Frequency and GSM technologies and making use of those existing technologies we can design a device which is capable of identifying the arrival of courier and forward the same to the receiver and also provide the details of

the goods so that they do not require to tracking the item from online. The basic idea of the system is to employ an RFID tag to the courier and send the location and item details to the receivers mobile. The receiver of the courier will have information about the goods so that he can track the status with internet and he can collect based on his availability without fail.

Ibrahim Inuwa and Dr. Oye N D[2] published a paper which aims in developing a software platform where the system will track the vehicle and was implemented using HTML and PHP programming language for frontend with MySQL as the backend. They have used a software system as NIPOST ADAMAWA that would be able to minimize its losses and optimize management to run more smoothly, improve quality of service rendered to customers.

Peter Kolarovszki, Juraj Vaculík and Libor Hofmann[4] explains in their paper about automatic identification and data capturing and developing a wave propagation model base on UHF RFID slim antenna which eliminates disadvantage of inlays in case if they are close to each other.

Pradip v Mistary, R H Chille [6]has proposed a paper explaining about the GPS incorporated to notify the user and detecting mails which is used in both industrial and commercial sector. They explain about how to alert the user about the parcel before it is delivered.

D.Santhoshi Rani and K. Radhika Reddy[7] proposed design provides information regarding vehicle Identity, speed, and position on real time basis. This information are collected by the controller by using different module and dispatch it to the monitoring station where it stores the information in database and display it on graphical user interface (GUI) that is user friendly

Hoang Dat Pham, Michqal Drieberg and Chi Cuong Nguyen [8] presents the development of the vehicle tracking system's hardware prototype. Specifically, the system will utilize GPS to obtain a vehicle's coordinate and transmit it using GSM modem to the user's phone through the mobile network. The main hardware components of the system are NEO-6Q GPS receiver module , LEON-G100 GSM module and arduino Uno microcontroller.

III. SYSTEM DESCRIPTION

A. WORKING

The system has been designed for locating the position of mail(courier) carrying vehicle. When the courier is been

delivered from the local office of sender, they apply any tag to represent a unique ID number and stores that number and the mobile number of the sender and receiver. Now, couple of such couriers with unique ID numbers are loaded in vehicle. A record is been kept that which courier is loaded in which of the vehicle. Then , a predelivery notification is sent to the receiver end and mad them aware about their courier, This system is installed in a mail delivery vehicle along with a tracking device i.e. GPS(Global Positioning system) which helps in updating the location of the courier continuously. The updated location will be then displayed on the web server using HTTP function. This information is sent by mobile station via internet. Thus, we can find out the real time status by simply knowing the domain name on the web server. Once when the courier is delivered to the destination, a message will be sent to the sender as well as receiver.
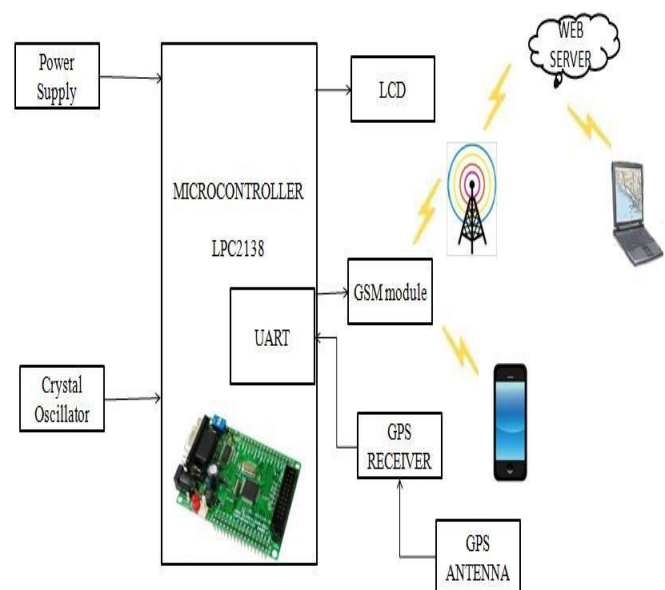

Figure 1: Block Diagram of The System

B. HARDWARE DESCRIPTION

1. Lpc 2138 Microcontroller

LPC2138 is a 64 pin ARM7 microcontroller. It has 8Kbytes Internal SRAM. It consists 32×8 General Purpose Working Registers. It possesses Ultra-Low Power Consumption. It works at fully Static Operation. It is 32-bit ARM7 TDMI-S microcontroller in a tiny LQFP64 or HVQFN64 package.

128-bit wide interface/accelerator enables high-speed 60 MHz operation. ISP/IAP via on-chip loader software. It has 512 KB of on chip program flash memory.

differentiability of texture with respect to texture features in order to obtain greater performance from any texture-based segmentation method. The texture features are 1) Coarseness: Coarseness basically relates to the distance in gray levels of spatial variations, which is implicitly related to the size of primitive elements forming the texture. It has a direct relationship to scale and repetition rates and most fundamental texture feature. The coarseness quantifies the number of edges in a local texture. 2) Contrast: Contrast measures distribution of gray levels that varies in an image and to what extent its distribution is biased to black or white. 3) Directionality: Directionality of an image is measured by the frequency distribution of oriented local edges against their directional angles. It is a global property over a region. This texture feature given by Tamura does not differentiate between orientations or patterns but measures the total degree of directionality in an image is given by Directionality. It is the most important feature given by Tamura about matrix to distinguish from another image that how much uniforms the region. 4) Line-Likeness: Line-Likeness in an image is average coincidence of direction of edges that co-occurred in the pairs of pixels separated by a distance along the edge direction in every pixel. Segmentation and classification plays a vital role in computer vision and pattern recognition and is widely applied to many areas such as industrial automation, bio-medical image processing and remote sensing. Over the last decade, several studies are developed to improve texture of the image for better segmentation performance. All these methods enhance the texture by representing all texture information using a single component.

II. LITERATURE SURVEY

Jianning Chi et al. discussed about the texture enhancement method was proposed which uses an image decomposition that allows different visual characteristics of textures. This method uses a modification of morphological component analysis (MCA) which allows texture to be separated into multiple morphological components each representing a different visual characteristic of texture. Then the methods propose procedures for modifying each texture component and recombining them to produce a texture-enhanced image [1]. Jerome Bobin et al, a new extraction/separation algorithm, MCA proved its efficiency. Then, exhibit a new advantageous way to tune the thresholds which we called MOM (Mean-of-Max). The MOM strategy differs from other heuristics in the sense that it is fast, accurate and adaptive. As it performs drastically faster than BP, MCA/MOM provides a practical alternative to this well-known sparse decomposition algorithm [2]. M. Joseph Prakash et al,

This paper proposes a new segmentation method for noise removal, image enhancement and segmentation. The proposed algorithm offers the advantage of providing good quality segmentation [3]. X.H. Wang et al, A new methodology for denoising the image using stationary wavelet transforms (SWT). The testing result on sample microarray images has shown an enhanced image quality [4].

J. L. Starck et al, This method extend MCA to a multichannel MCA (MMCA) for analyzing multispectral data and present a range of examples to illustrate the result [5]. M. J. Fadili et al, This paper proposed a novel decomposition method-morphological component analysis (MCA)-based on sparse representation of signals. MCA assumes that each (mono channel) signal is the linear mixture of several layers, the so-called morphological components, that are morphologically distinct. The success of this method relies on two tenets: sparsity and morphological diversity [6]. Idrissi Sidi Yassine et al, The method described the texture feature analysis process based on the spectral histogram. After that a new algorithm for texture segmentation using this descriptor, statistics based on the spectral histogram, and mathematical morphology was described [7]. M. Joseph Prakesh et al, This paper described a novel technique of image segmentation for texture images based on six different texton patterns and morphological transforms [8].S.D. Pathak et al, The use of edge guidance for boundary delineation can also be extended to other applications in medical imaging where poor contrast in the images and the complexity in the anatomy limit the clinical usability of fully automatic edge-detection techniques [9]. Dorin Comaniciu et al, Discrete data is convergence of a recursive mean shift procedure to the nearest stationary points of the underlying density function and thus, it is used in detecting the modes of the density. The relation of the mean shift procedure to the Nadaraya -Watson estimator from kernel regression and the robust M-estimators of location is also established [10].

III. PROPOSED METHOD OF TEXTURE ENHANCEMENT

In the method presented herein, it is assumed that texture consist of several different components representing different visual characteristics. By modifying these components in different ways, distinct textures become more different in terms of the descriptors used to differentiate them.

The Morphological Components of different textures are then modified in different ways so that textures become more different with respect to these texture characteristics. Morphological Component Analysis (MCA) has proven successful in decomposing images into morphological distinct components.

Figure 2: Pin Diagram of Lpc2138

Circuit diagram of power supply
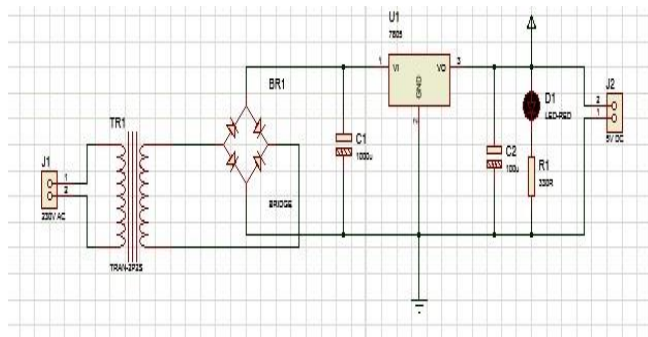
Figure 3: Power Supply
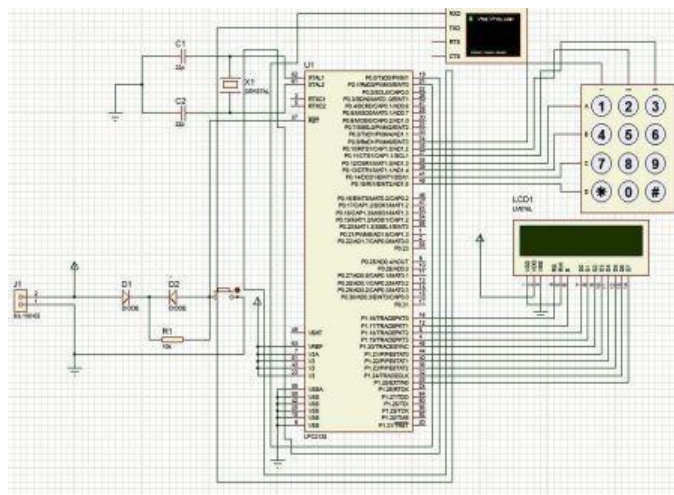
Figure 4: Schematic Diagram of The System

UART serial communication

Serial communication is widely used protocol. It is used because of low cost and easy availability.

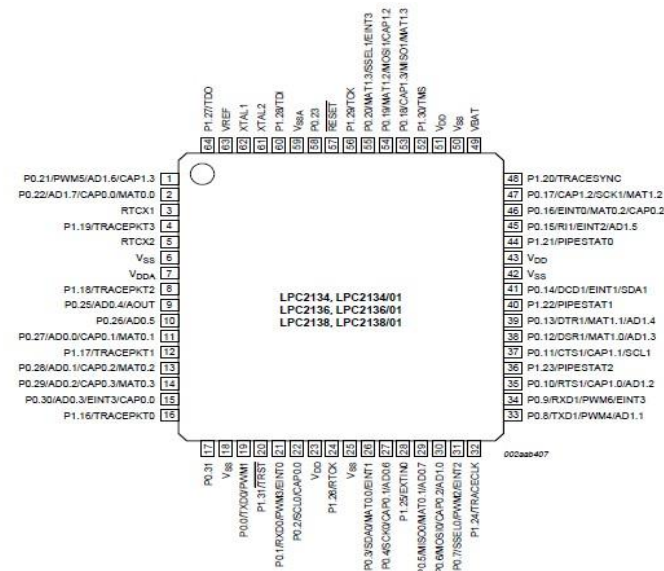ARM7 has two inbuilt serial communication UART0 and UART

PORT	PIN NUMBER	PIN NUMBER OF LPC2138
UART0	TxD0	P0.0
UART0	RxD0	P0.1
UART1	TxD1	P0.8
UART1	RxD1	P0.9

HTTP function in Web server

A web server is a computer system that processes request via HTTP, the basic network protocol which is used to distribute information on www(world wide web).It refers to entire system or specifically to software that accepts and supervises HTTP request. The primary function of web server is to store, process and deliver web pages to clients. Pages delivered are most frequently HTML documents that includes images, style sheets and scripts in addition to text content. The of HTTP in the system is to sent a request to server for displaying the real time location of the courier carrying vehicle via Google Maps.
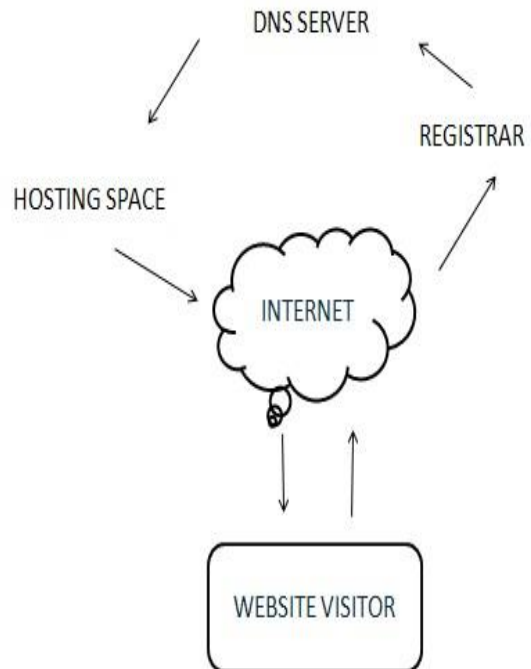

Figure 5: Function Of Http On Web Server

Steps of how the HTTP function works:

i.   Clients browser selects Domain name

ii.   DNS translates domain name into corresponding IP address

iii.   Browser decides which protocol to use

iv.   Server sends a GET request to retrieve the at hosting space

v.   Hosting space verifies the data and returns back to browser

vi.   Browser then converts data into html document ,script or images

vii.   Displays the result to user

IV. FLOWCHART

V. RESULTS
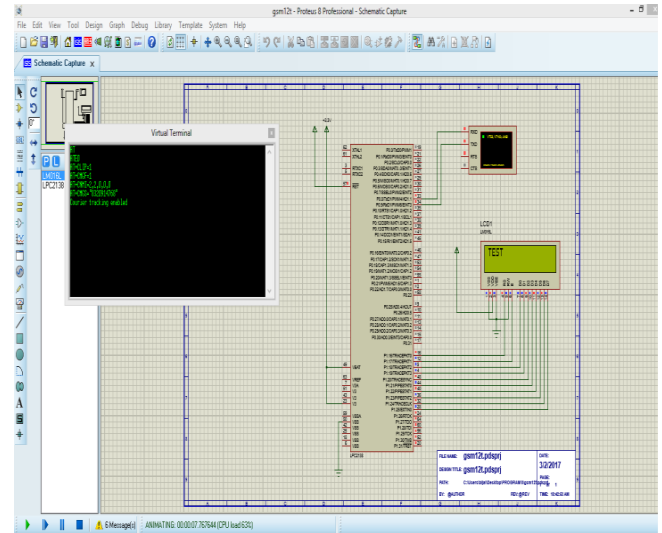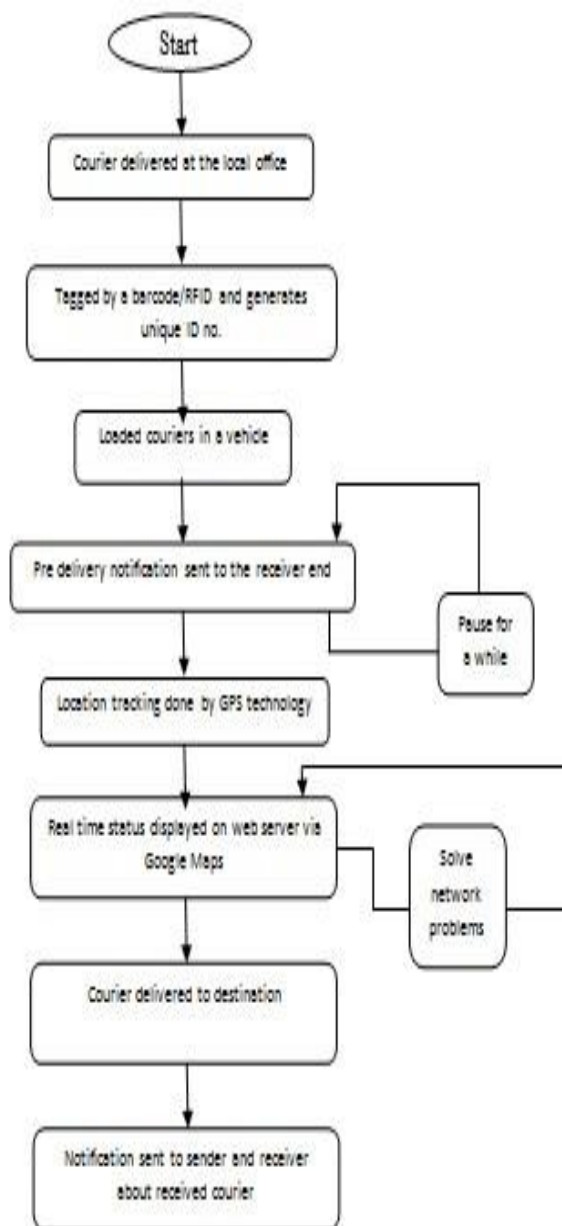
HARDWARE CONNECTIONS:
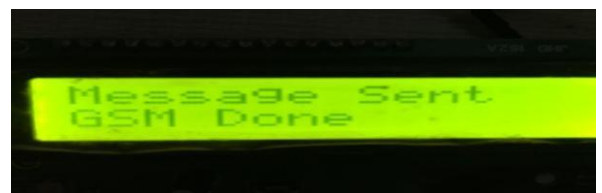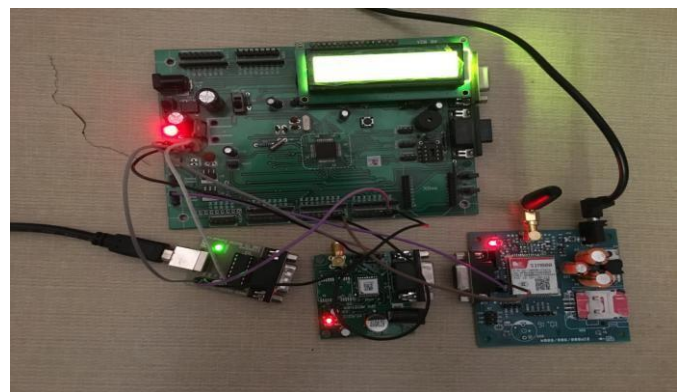
LOCATION DISPLAY IN LAITUDE AND LONGITUDE

VI. CONCLUSION

This paper titled PREDELIVERY NOTIFICATION AND SORTING SYSTEM IN MAIL SERVICE is designed and developed for the superior service for mails(couriers).The proposed system will monitor and display location of the courier carrying vehicle and further will be displayed on the web server via Google Maps. The advantage of the system is it can be installed in any vehicles such as car, trucks or motorbikes, also locate the stolen vehicle through server easily. This system is very secure and effective and keep track on the status of delivery.

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REFERENCES

[1] Naresh Vurukonda, Dr.B.Thirumala Rao and Dr.N.Sambasiva, "Analysis on GSM Enabled Intelligent Transfer System"; IEEE Transactions, Vol. 1,Issue 4;2016

[2] Ibrahim Inuwa and Dr. Oye N D, "Courier Service Tracking System: NIPOST Adamawa State Nigeria", International Journal of Engineering Research & Technology, Vol. 4 Issue 01,January- 2015

[3] Mashood Mukhtar, "GPS based advanced vehicle tracking and vehicle control system",I.J. Intelligent Systems and applications,1-12,2015

[4] Peter Kolarovszki, Juraj Vaculík, Libor Hofmann, "Identification of postal mails and crates by new developed UHF RFID antenna"; IEEE transactions, Vol. 14, No 2; January 2016

[5] S.Eken, A.Sayar, "A smart vehicle tracking systembased on location aware services and QR codes", IEEE Transactions;299-309,2014

[6] Pradip v Mistary, R H Chille, "Real time vehicle tracking system based on GPS and GSM technology",IEEE Transactions,March 2016

[7] Dr.Santhoshi Rani and K. Radhika Reddy, "Raspberry pi based vehicle tracking and security system for real time applications",vol.5 Issue.7,July 2016

[8] Hoang Dat Pham, Michqal Drieberg and Chi Cuong Nguyenn , "Development of vehicle tracking system using GPS and GSM modem",IEEE Transactions,February 2014

[9] SeokJu Lee, Girma Tewolde, Jaerock Kwon, "Design and implementation of vehicle tracking system using GPS/GSM/GPRS technology and smartphone application",IEEE Transactions,April 2014