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# INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

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## A non-intrusive approach for drowsy and drunk driving using computer vision techniques

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### ABSTRACT

*This paper presents a holistic, non-intrusive approach for drunk and drowsy detection of the driver using computer vision techniques of facial landmark detection and motion detection. The driver's continuous real-time video feed is observed with the help of a smartphone camera. A singliscalar quantity, Eye Aspect Ratio (EAR) which characterizes persistent eye blinks continuously analyses this feed. Simultaneously the system checks the body and the head movements using the differential imaging technique, which operates in real-time. A severity score indicating the fitness to drive is generated cumulatively using both methods. The driver is notified with the sound of an alarm if the results are positive based on a threshold value of the severity score.*

**Keywords**— Computer vision, Real-time processing, Motion detection, Facial landmark detection, Eye Aspect Ratio, Severity score

### 1. INTRODUCTION

Drunk and drowsy driving are the leading causes of road accidents across the world. Klauer et al. [1] have found that drowsiness increases the risk of an accident up to six times, which is further compounded due to nighttime conditions or in situations without prior sufficient sleep [2]. It is a well-known fact that the influence of alcohol is one of the major causes of reduced vehicular control and increased risk of accidents. Numerous studies have established that the risks of road accidents, injury or death increase exponentially under the influence of alcohol [3]. In Europe itself, there is an estimation of 10,000 deaths each year because of drunk driving [4]. Alcohol-impaired driving accidents contribute to approximately 31% of all traffic casualties in the USA [5]. In China, Li et al. found that about 34.1% of all road accidents were alcohol-related [6]. All of these studies indicate serious human lapses and avoidable causes of death, which can be prevented by proper monitoring and alerting technology. Therefore, it is

essential to develop a holistic, non-intrusive system to continuously monitor a person's physical and facial movements and to alert them at critical moments to avoid road [17] and [18]; techniques using a stereo camera [18] and [19]. Some of these techniques have also been converted into commercial products such as Smart Eye [18], Seeing Machines DSS [19], Smart Eye Pro [18] and Seeing Machines Face API [19]. However, these commercial products are still limited to controlled environments and require laborious calibration techniques. Thus, there is a long way to go before a reliable and robust commercial product is built in this category.

The existing systems based on real-time driver monitoring, using image processing techniques are largely tackling one aspect of the problem, i.e. either drowsiness or drunkenness. To accidents, thereby significantly preventing serious injury and loss of lives.

### 2. RELATED WORK

Existing methods use both active and passive techniques to develop real-time monitoring systems. Active methods use special hardware such as illuminators [7], infrared cameras, wearable glasses with special close-up cameras observing the eyes [8], electrodes attached to the driver's body to monitor biomedical signals, like cerebral, muscular and cardiovascular activity [9] [10]. These methods provide reliable and accurate detection. However, the cost of such specialized equipment is a major drawback hindering their popularity. These equipment are also intrusive that is, it causes annoyance to the driver's body and hinders regular driving. The unusual effect of driving in the presence of invasive instrumentation reduces the drowsiness in testing and simulation conditions. Consequently, the efficacy of such models is limited in real road conditions. Most of them are yet to be effectively introduced in the market.

Passive techniques in monitoring systems majorly rely on the standard remote camera. A set of these passive methods are



# Person Identification using Deep Learning

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**Abstract**—In the present scenario, digital data generation, data consumption becoming necessary due to advancement in technology. The business process are taking advantage of the available data. The human data processing becoming important in various types of applications like person authentication, verifications automatically by the machines. One of the application is to identify the person automatically by the machine.

Face recognition technology is available for use for couple of years. The face recognition technology is limited by the use of the restricted environment. In this paper, the method for person identification in unrestricted environment is presented using deep neural network. The face recognition and body part recognition these two important steps are used to identify the person.

**Keywords**--Face recognition, deep learning, Person Re-identification.

## 1. INTRODUCTION

Identification of the individual person using various technologies becoming important due to the use of person identification in various applications like verification as airport, different unities, digital transactions, access to the restricted area or information.

The person identification problem has been studied for several years, but the human like performance for person recognition by the machine is not achieved. There are many challenges for the person identification such as size, color, orientation and occlusion. The face recognition, recently available for use in the restricted environment.

The person identification is done using face matching process. In this case, face images are stored in the face database. The unknown face image is matched with the face images available in the face database. The Face Recognition is implemented to person recognition but the constraints is the person should be close enough and also should front towards the camera. This process of face identification has limitations for real time face recognition application.

In surveillance application, person recognition becoming very important as video cameras are installed in different areas. Previous work related to the Identification of Person is done through Facial Recognition only and that in addition, when the person has to show himself in front of the camera with properly aligned face fronting camera. This approach was very tedious as each time person has to manually show himself in front of camera to mark himself present many areas. This produces large video data for the processing.

The person identification in surveillance video is challenging problem due to several issues like person orientation, scale, occlusion by other objects, lighting illumination etc. This paper the problem of person Identification using process of the person re identification is explored.

Person re-identification is the process of mapping images of the individual person captured from various cameras or in a different directions or in different situations or instances. Another way to define is allocating an identity (ID) to a person in multiple camera configuration. Generally the re-identification is limited to a minor duration and a small environment (area) covered by camera. Humans have that ability to recognize other persons by using descriptors based on the person's characteristics related to body like height, face, clothing, hair style and shade, locomotion(walk pattern), etc. and this seems to be an easy problem for humans but for a machine to solve this problem is extremely difficult.

In visual surveillance technique, it is very important to link or associate individual people across different camera orientations. Cross view individual person re-identification ensure automatic identification and structure of particular individual person-specific features or movements over huge expanded environment and it is important for surveillance used in many applications for example tracking people using multi-camera and in forensic search. Particularly, for doing person re-identification, one compares a query person (person to be identified) the image is captured by camera view against a database created of the many people captured in another view for creating a ranked list or array according to their comparison distance similarity index.

The most existing methods or approaches in order to perform ReID (re-identification) by changing visual appearance such as shape of the face, texture of the body and color of individual or multiple person's images. People's appearance is naturally limited because of the unavoidable ambiguities related to visual ability and untrust due to appearance

# COMPARISON OF EFFICIENCIES OF LINEAR REGRESSION AND GAUSSIAN BELL CURVE FOR CASH INFLOW MANAGEMENT OF ATM'S

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## **Abstract**

*Management of Cash inflow is an essential operation of banks for the ATM machines on day to day basis. So, Estimation of cash inflow is required in a very precise manner hence the need arises that we use the best possible methodology to garner optimum results .therefore, either the best single methodology or the combination of methodologies in an appropriate manner is needed to be sought.*

**Index Terms-** *Linear regression, Gaussian bell curve, Time series analysis*

## **I.INTRODUCTION**

Comparison of efficiencies of linear regression and Gaussian bell curve for cash inflow management of atm's involves:

1. Finding out the linear regression efficiency.
2. Finding out the Gaussian bell curve efficiency.
3. Finally, comparing the efficiencies and finding out the best suitable algorithm.

Automated Teller Machines (ATMs) are 24-hour self-service machines that enable bank customers conducting their financial transactions without visiting the bank branch. In spite of online banking facilities expansion, need for ATMs transactions remains high over years and makes ATMs an irreplaceable devices in everyday life. In order to meet growing cash needs of bank clients, banks have to increase continually the number of their ATMs in different location to make cash available.

1. While supplying ATMs with cash, Bank faces with minimizing of total costs. Total costs are consisted of 3 basic parts:
  1. Cost for unwithdrawn cash in the ATM itself (cash freezing);
  2. Cost for transport from the branch to the ATM.
  3. Cost for insurance of the cash in the ATM.



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## Tracing the original source of FMCG-SCM using Blockchain

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### ABSTRACT

*Fast Moving Consumer Goods come a long way from the production of their raw materials to finally being bought by the end user, that is. the customer. Their Supply Chain Management is a tedious task and doesn't really provide you with an auditable trail. The source and thus the quality of the product raises few questions. The paperwork involved in this leads to days of auditing for even a small discrepancy arising in the whole SCM. One of the obvious solutions to this is the digitalization of the whole process. But that still doesn't stop it from getting tampered. The truth still poses a question with the quality of the product being consumed by the end user. Adding another level of surety is only possible by ensuring that the data is not tampered with during the whole supply chain of the product. This is only possible by having a blockchain to moderate the whole process. This will not only make sure that the data regarding the product is true to its point but also make the auditing easy and fast in case of any discrepancy. Few western countries have already implemented blockchain for the products which require high quality throughout the supply chain. Since the type of supply chains vary and data privacy is required in some stages between different parties, private blockchains are preferred in such scenarios to create that balance between truth auditability and data privacy.*

**Keywords**— Blockchain, FMCG, Source truth auditability, Supply Chain Management

### 1. INTRODUCTION

Supply chain management of a fast moving consumer good is a long chain of the product preparation starting from its raw materials to the final consumption by an end user that is the customer. It begins from the manufacturing of the raw materials, which then move towards the processing units, distributors and then finally sellers. The chain isn't really that simple as it seems to be. Majority of tasks are handled by paperwork in small to medium scaled supply chains. The large ones, though with the facility of digitalization for their internal workings, don't provide with the concrete source of truth to ensure the quality of the food

being consumed by the customer. Having a quick look over the current supply chain and its working doesn't reveal much about their underperformance in real life. Though it seems a tedious work over a long chain, nothing much can be done over the operations and working involved in it. Though, the efficiency can be tuned by improving the time required to solve any discrepancy between the multiple parties involved in the whole chain by automating their asset transfer operations. But the actual benefit lies in the ability to trace to the original source and having the sense of reliability that the data isn't tampered with during the whole journey of product preparation. This will not only help the end user with a sense of satisfaction but will also force the intermediaries to focus on their quality control so that their contracts aren't affected.

The ability to have the above-mentioned functionalities without breaking the existing system is to have a continuous record of the transfer of assets taking place between the multiple parties along with the state of the raw materials and processed items. This is nothing but having a blockchain for the whole supply chain to make sure the data regarding the quality during the stages isn't tampered with. The smart contracts, that is. the contracts between the multiple parties get executed automatically on the transfer of assets, thus reducing the time it takes to do so via the traditional way. This blockchain ensures that there is proper accountability of the data being entered into it regarding the product at different stages.

But all this doesn't mean that the data can be made public regarding the whole chain. The contracts being executed are made after an agreement between the parties involved, that is. they have a proper channel of execution between them. Their data privacy is a point of concern for them and wouldn't want other parties to have a look into it. Therefore, to address this concern of the intermediaries, different types of blockchains are brought up called the private blockchains to address the enterprise level issues involved between parties with varied agreements and different level of privacies. These private blockchains, along with the advantages of public blockchains,





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# Implicit Aspect Extraction for Sentiment Analysis: A Survey of Recent Approaches

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## Abstract

The research in Sentiment analysis (SA) is in vastly growing stage as people become more expressive on social media, blogs, forums and e-commerce websites by sharing their opinions, reviews and comments. In Aspect-level SA opinions about various aspect or features of an entity is extracted. Users specify aspects by explicit words (i.e. Explicit aspects) or sometimes the aspects must be inferred from the text (implicit aspects). Detecting implicit aspects is challenging but very important and limited studies focused on the extraction of implicit aspects. This paper provides a survey on recently proposed techniques for detecting implicit aspects. We have classified the studies according to approaches they have followed, also specified limitations and future work stated by authors. We have discussed different issues in implicit aspect extraction which will give directions for future research.

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*Keywords:* Aspect Extraction; Implicit Aspects; Aspect based Sentiment Analysis

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## 1. . Introduction

Sentiment analysis (or opinion mining), is a field of research which deals with the analysis of user's opinions, sentiment expressed in written text. SA is currently very dynamic research area due to the fast growth of internet and users' active participation for sharing, commenting and discussing over blogs, forums, social sites and shopping portals. SA can be helpful for manufactures, governments, businesses to get the feedback /impact of their product, service or decision. Sentiment Analysis is done at document-level, sentence level, and aspect-level. In document-level



# Video Object Detection through Traditional and Deep Learning Methods

Sita M. Yadav, Sandeep M. Chaware

*Abstract: Object detection in videos is gaining more attention recently as it is related to video analytics and facilitates image understanding and applicable to . The video object detection methods can be divided into traditional and deep learning based methods. Trajectory classification, low rank sparse matrix, background subtraction and object tracking are considered as traditional object detection methods as they primary focus is informative feature collection, region selection and classification. The deep learning methods are more popular now days as they facilitate high-level features and problem solving in object detection algorithms. We have discussed various object detection methods and challenges in this paper.*

*Keywords : Video Object Detection, Deep Learning Methods*

## I. INTRODUCTION

Computer vision is a field in which, object detection from the video sequences is an interest point for many vision based application like, video surveillance, traffic controlling, action recognition, driverless cars and robotics. The task of object detection includes localization and classification. From video frames data is extracted to predict the objects in which task of drawing a bounding box around one or more object is called localization and task of assigning label is classification. The object detection from video sequences can be based on feature, template, classifier and motion. Various papers have discussed about role of moving camera and fixed camera in object detection. But object detection in videos which capture using moving cameras is less and work is still going on. Object detection becomes primary requirement for computer vision which helps in understanding semantic of images and videos.

## II. LITERATURE SURVEY

In [1] the author introduced method based on single deep neural network for detecting objects. The approach is based on SSD which use aspect ratio and scales for feature map, performance can be improved by using RNN. In [2], the authors have proposed a Region Proposal Network (RPN) which work on detection network with full-image convolutional features, hence gave cost-free region proposals. This paper showcases a deep learning based object detection method which achieves speed of 5-17 fps. [3] have proposed a framework by using object detection, classification and semantic event description. The event is

analyzed by integrating the object detection and scene categorization. The system can be improved by automatic scene learning methodologies.

The authors of [4] have proposed methods and architectures to understand videos. The architecture is given for automatically categorization and caption in the video. The system implemented on temporal feature pooling (TFP), 3D Convolution, frame majority and LSTM for classification. Microsoft multimedia dataset used, the output is the predicted video categories and video captioning. Better dataset cleaning is required along with focus regions. One frame per second extracted from video which may probably missed some important information. The various detection algorithms are explained using given algorithm but accuracy of detection is not discussed. [5] proposed a system to detect moving objects using background subtraction, edge detection and geometrical shape identification. If the object is moving in speed then this system does not give accurate result. [7] Suggested pedestrian detection method which separates the foreground object from the background by utilizing image pixel intensities. The foreground edges are enhanced by high boost filter. [8] the authors put forward object detection system using CNN. The neural network algorithms are able to handle the occlusions and camera shake problems, with use of frame difference method. However, proper analysis of training model is required. [9] introduces BMA (Block matching algorithm) for moving object detection. This method divide the video frames into non-overlapping blocks then matching is done in reference frame. The computational time for BMA is low and robust. However, further study is required for lossless compressed video based Background Subtraction (LIBS) method is used. [14][15] have given state of art region based object detection methods.

## III. FACTORS AFFECTING OBJECT DETECTOR

The object detection requires to identify the features that impact performance of detector with framework. Based on literature survey the various factors which affect detector performance are feature extractor, threshold decision for loss calculation, boundary box encoding, training dataset, data augmentation, localization factors and feature mapping layers.

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## Facilitating Secure and Efficient Health Information Exchange using Blockchain

Sagar Rane , Sanjeev Wagh , Arati Dixit

PDF

### Abstract

In traditional health information exchange activities in India, most patient i.e. end user data is shared either through paper records or verbally. Transfer of patients between different hospitals across the country ensues a transfer of medical information, which due to the above modes of transfer can get damaged or be only partially communicated. Even though the above model allows low-cost and confidential mode of data sharing, the paradigm increase in medical data over the years and the importance

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# Text Summarization Using Neural Networks

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**Abstract**— There are various news/articles which cannot be read completely in the hush of our daily schedules. Thus, summarization comes into picture. This paper focuses on summarizing a text using neural networks which creates a summary containing the important key points of the text/article. This summarization will be done using neural networks (word2vec model). It will focus only on English articles. The input given will be in .txt format. Thus it will make a lot easier to get a quick summary of the long articles and derive the conclusion about what is there in the articles and whether they are relevant for a user according to their interest.

**Key words:** Word2vec, Neural Network, Abstractive, Extractive, LSTM

## I. INTRODUCTION

As the amount of information on the web is increasing rapidly day by day in different format such as text, video, images. It has become difficult for individuals to find relevant information of the interest. When user queries for information on the internet he gets thousands of result documents which may not necessarily be relevant to his concern. To find appropriate information, a user needs to go through the complete documents which results in information overload problem which leads to wastage of time and efforts. To deal with this situation of dilemma, automatic text summarization plays a vital role [6]. Automatic summarization compresses a source document into meaningful content which reflects main thought in the document without altering information. Thus it helps user to grab the main notion within short time span. If the user gets effective summary it helps to understand document at a glance without checking it completely, so time and efforts could be saved. Text summarization process undergoes in three steps analysis, transformation and synthesis. Analysis step analyzes source text and select attributes. Transformation step transforms the result of analysis and finally representation of summary is done in synthesis step.

In an abstract summary, the summarized text is an interpretation of an original text. The process of producing involves rewriting the original text in a shorter version by replacing wordy concept with shorter ones[9].

## II. RELATED WORK

### A. Types of Summarization

A large document is entered into the computer and recapitulated content is returned, which is a non-redundant extract from the original passage. Automatic text summarization process model can be divided into three steps. First is the preprocessing of source text, second is interpretation of source text representation and source representation transformation to summary text representation with an algorithm and in the final step, summary text generation from summary representation [10].

Feature extraction for Wikipedia articles is done using ten different feature scores which is fed to the neural network and the neural network returns single value signifying the importance of the sentence in the summary[8].

There are two distinct types of features: non-structured features (paragraph location, offset in paragraph, number of bonus words, number of title words, etc.) and structured features (rhetorical relations between units such as cause, antithesis, condition, contrast, etc.) [2]

### 1) Extractive Method:

Extraction is mainly concerned with judging the importance, or indicative power, of each sentence in a given document [1]. Extractive text summarization involves the selection of phrases and sentences from the source document to generate the new summary. Techniques involve ranking the relevance of phrases in order to choose only those most relevant to the meaning of the source. Extractive summarization is basically just picking up the words from the text as it is which are important and putting them in the summary. No interpretation of the text is done in this process. We also anticipate that shod sentences are unlikely to be included in summaries[3].

There are four major challenges for extractive text summarization as follows: identification of the most important pieces of information from the document, removal of irrelevant information, minimizing details, and assembling of the extracted relevant information into a compact coherent report[5].

### 2) Abstractive Method:

Abstractive text summarization involves generating entirely new phrases and sentences to capture the meaning of the source document. This approach is commonly used by humans for getting the summary but it proves to be a challenging approach. Classical methods operate by selecting and compressing content from the source document. Abstractive summarization techniques tend to copy the process of 'paraphrasing' from a text rather than simply summarizing it. The abstractive method is more difficult and complex as compared to extractive. It copies the way human gets the summaries.

## B. Techniques of Summarization

### 1) Bag of words:

This model is a simplified representation which is used by natural language processing and information retrieval (IR). A text which can be a sentence or a document is represented by bag (multiset) of its words, disregarding grammar and even word order but keeping multiplicity. In this approach, words are tokenized which are used for each observation and frequency of each token is found.

### 2) TF-IDF:

Tf-idf refers term frequency-inverse document frequency, and the tf-idf weight is a weight often used in information retrieval and text mining. TF-IDF weight is a statistical measure which is used to evaluate the importance of a word in a document in a collection or corpus. The importance shows proportional behaviour to the number of times a word

# Performance Evaluation of Routing Protocols in Large Size Disaster Scenario

Gajanan Walunjkar, Anne Koteswara Rao

*Abstract: Peoples in the disastrous areas under collapsed buildings or landslides need to be rescued in seventy-two hours. Ad hoc networks have been proved to be suitable for various disaster scenarios since no infrastructure needs to be deployed for communication. In this paper, various ad hoc routing protocols such as destination distance vector routing protocol, dynamic source routing protocol, ad hoc on demand routing protocol etc. are discussed and analyzed in such disaster scenario using disaster area mobility model on large size. Disaster area mobility model is more desirable in such scenario. Also these protocols are compared using various performance qualitative and quantitative metrics such as packet delivery ratio, delay, throughput, control overhead and energy etc.*

**Keywords :** MANET, DSDV, DSR, AODV, AOMDV, DM

## I. INTRODUCTION

Many people trapped in the disastrous areas may have a large chance to survive if they are rescued in 72 hours [1,2] (Golden 72 Hrs.). Communication is required at various levels among peoples for their rescue and relief operations. Due to the disasters, existing communication setup fails [3] and it is also difficult to set up a new infrastructure in short period of time. In order to simplify the communication process, ad hoc networks are very much useful in such

Update	Triggered to the neighbors			
Loop Free	Yes	Yes	Yes	Yes
Routing Overhead	High	Less	High	Less
Caching Overhead	Medium	Low	High	High
Throughput	Low	High	High	Low

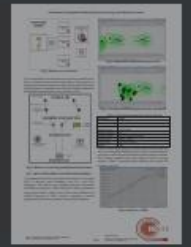
Movements of nodes inside ad hoc network are characterized by mobility models [10]. Random Waypoint mobility model is the most widely used in ad hoc networks. Manhattan mobility model also allows nodes to move determined paths like vehicles. In Disaster area model, various action areas such as incident location, transport location, casualty's treatment area and hospital zone exists. All peoples trapped in disasters area and involved in rescue operations belongs to any of the above areas.

## II. TECHNOLOGY USED

In disaster area model (DM), the disaster scenarios are divided into different action areas [11] and the movements of nodes emulate the movements of ambulances taking injured people and other vehicles. Every person belongs to any of the



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## Performance analysis of routing protocols in MANET

Gajanan Madhavrao Walunjkar, Koteswara Rao Anne

### Abstract

Popularity of Mobile ad hoc network in research is due to their ad hoc nature and effectiveness at the time of disaster management when no infrastructure support is available. Due to the limited transmission range of wireless network interfaces, multiple network hops may be needed for nodes to exchange data across the network. In such a network, each mobile node operates as a router, forwarding packets for other mobile nodes in the network that may not be within the direct reach. Routing protocols developed for wired networks such as the distance vector or link state protocols are inadequate here as they not only assume mostly fixed topology but also have high overheads. This has led to several routing algorithms specifically targeted for ad hoc networks. In this paper, we include the MANET supported routing protocols and their performance analysis over different performance parameters such as packet delivery ratio, delay, throughput, control overhead and energy etc.

### Keywords

MANET, DSDV, DSR, AODV, OLSR, AOMDV

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Aparna S. Joshi & Shyamala Devi Munisamy  
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# Sarcasm Detection on Tweets using Deep Learning

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R. Suguna ✉, M. Shyamala Devi, Rupali Amit Bagate & Aparna Shashikant Joshi

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## Abstract

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## CFD Analysis of Diesel Autorickshaw Exhaust System

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**Abstract.** This work aims to study exhaust flow pattern of one of the Three Wheeler Exhaust System (Bajaj RE Diesel Auto Rickshaw) in order to understand the exhaust characteristics, implications to surroundings, flow tendencies and exhaust dispersion at outlet. This work utilizes Finite Volume Computational Fluid Dynamics (CFD) Analysis which is performed using Solid Works Flow Simulation tool to analyse Autorickshaw Exhaust System Model developed using Proe Creo. The Model is created by measuring actual dimensions of the Exhaust System Components, neglecting all hangar positions as their contribution to thermal behaviour is negligible.

### 1. Introduction

The branch of fluid mechanics which uses numerical analysis to solve and analyse problems or system that involve fluid flows which might be forced or natural and also to perform calculations required to simulate interaction of fluid with surfaces defined by boundary conditions of given system is called as Computational Fluid Dynamics. Fundamentals of all CFD problems is the Navier-Stokes equations, which define many single-phase (gases or liquids, but not both) fluid flows. The equations are simplified by removing terms describing viscous actions to obtain the Euler equations [1]. Further simplification is achieved by removing terms describing vorticity to obtain the full potential equations. For small perturbations in subsonic and supersonic flows (not transonic or hypersonic) these equations

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International Journal of Engineering and Advanced Technology (IJEAT)  
ISSN: 2249 – 8958, Volume-9 Issue-1, October 2019

## Development and Validation of Nusselt Number Correlations for Mixed Convection in an Arc-Shape Cavity

R B Gurav, Mandar M Lele

**Abstract:** *The analytical study has been performed to investigate the combined effects of lid movement and buoyancy force parameter on mixed convective flow in an arc-shape cavity. The dimensional analysis based on Buckingham  $\pi$ -Theorem is used in the present study. It results in correlations for Nusselt number in terms of non dimensionalized parameters, viz. Re, Pr, Gr,  $\theta$  etc. The correlations developed are validated against the experimental data of horizontal arc- shape cavity and numerical data of inclined arc-shape cavity obtained from open literature. The correlation developed in the present study for horizontal arc-shape cavity is valid for wide ranges of Re varying from 30 to 1500 and Gr from 0 to 107. In inclined arc-shape cavity it is valid for Re varying from 30 to 1500, Gr from 105 to 107 and inclination angle from 150 to 600. The close agreement in the comparison between predicted results by correlation developed in the present study and reported Nu correlation shows the validity of the correlation.*

**Key words:** Arc shape cavity, Buckingham  $\pi$ -theorem, Dimensionless correlation, Mixed convection, Nu.

### I. INTRODUCTION

The mixed convection process in lid-driven cavities has developed substantial importance because of its congruence to heat transfer performance and variety of applications like nuclear reactors, solar ponds, dynamics of lake and heat

Forced convection effects in an inclined lid-driven arc-shape cavity with three physical parameters including Gr ranging from 105 to 107, Re varying from 30 to 1500 and  $\theta$  from 150 to 600. Their results show that for all inclinations, average Nu increases as Gr increases. However the correlations for average Nusselt number related to inclination angles is not reported in this study.

The studies presented above are merely focused on numerical and experiential investigations of natural and mixed convection heat transfer inside the arc shape cavity. The objective of this study is to develop correlations using dimensional analysis to relate the variables of buoyancy effect and heat transfer characteristics of any flow undergoing mixed convection inside an arc-shape cavity. The set of dimensionless correlations relating average Nusselt number for mixed convection in a lid driven arc shaped cavity are developed using Buckingham  $\pi$ -theorem in the present study. Validation of the obtained Nu correlations for horizontal and inclined arc-shape cavity is also made to check their applicability for combined convection flows. The physical model of an arc shape cavity is subjected to moving lid is schematically shown in Fig.1. The profile of an arc shape wall is defined by the expression.  $(x-p)^2 - (y-q)^2 = r^2$ .

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## HEAT TRANSFER ENHANCEMENT IN MOTOR-BIKE SILENCER USING DELTA WING VORTEX GENERATOR

PRITEE PUROHIT<sup>1</sup> & R B GURAV<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of Mechanical Engineering, Army Institute of Technology, Pune, Maharashtra, India

<sup>2</sup>Research Scholar, Department of Mechanical Engineering, Army Institute of Technology, Pune, Maharashtra, India

### ABSTRACT

A silencer is the passage through which exhaust gases leaves the vehicle after being combusted in the engine. The combustion temperature may reach close to 500°C. Even though engines are provided with fins to help it cool with air flow, the exhaust gases are forced out of the chamber while they are still hot. Thus, the silencer also gets heated by the effect of these gases. Hence, there is a need to reduce the effect of harmful, heated exhaust gases. Therefore, manufacturers provide chambers within such silencers to curb sound and emission. The exhaust gases bounce off these chambers and thus tend to keep the silencer hot. Excessive heat can cause a host of problems and results in the reduction of engine performance. Also, excess heat generation may result in deterioration of motor oil properties and it can cause deposits on the surface of intake valves. Deposits on the air valve affect the airflow inside the engine and it is the major reason of poor sealing of the entire combustion chamber. This series of events lead to misfire, rough idle and also reduced power and fuel economy. The hot spots on the silencer surface are reducing its life. The objective of this research is to increase convective heat transfer coefficient of air in the annular area of silencer and its enclosure sheet to enhance heat transfer using passive methods. Method employed to achieve these using delta wings or vortex generators on the enclosure sheet of silencer. We studied the flow behavior and convective heat transfer characteristics of fluid passing through an annular region between silencer outer surface and an enclosed sheet. The enclosed sheet is installed with delta wing attached on the surface facing silencer at an angle of attack,  $\alpha=45^\circ$  and aspect ratio,  $A=2.0$ . The use of delta wing increases convective heat transfer coefficient and increases over all turbulence thus improves heat dissipation through the spaced annular region. Heat transfer and flow pattern are obtained at varying velocities at an angle of attack,  $\alpha=45^\circ$ .

**KEYWORDS:** Heat Transfer, Convective, Silencer Cooling, Delta Wing & Heat Dissipation.

Received: Feb 15, 2020, Accepted: Mar 05, 2020, Published: Apr 01, 2020, Paper Id.: IJMPERDAPR2020089

### 1. INTRODUCTION

The hot gases generated from combustion of fuel gases through the exhaust system of an automobile. A silencer is the passage through which exhaust gases leaves the vehicle after being combusted in the engine. The combustion temperature may reach close to 500°C. Even though engines are provided with fins to cool with the air flow, the exhaust gases are forced out of the chamber while they are still hot. Thus, the silencer also gets heated by the effect of these gases. The average operating temperature of most of bike silencer is around 110°C. An unavoidable side effect of silencer is back pressure due to this waste heat builds up on the silencer surface. If this waste heat cannot escape, it can overload the cooling system and can cause hotspots on the silencer surface.

Heat transfer augmentation or heat transfer intensification is the technique used for improving the heat transfer performance [1]. Improvement in performance of heat transfer aspect deals with improvements in factors like heat transfer coefficient  $h$ , pressure drop reduction and enhancement in the Nu number [2]. Vortex generator is



# Smart Farming Using Automated Bot –Dr Harjeet Kaur

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Volume-7, Issue-6, Jun-2019, <http://iraj.in>

## SMART FARMING USING AUTOMATED BOT

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**Abstract** - Agriculture is one of the fastest growing industries and with advancements in Science and technology, this sector is booming exponentially. In order to make the industry more efficient and meet the growing demand of food, it is necessary to increase the efficiency of poly crop and automated mono crop farming. This can be achieved by integrating the technologies of future, like IOT, data analysis, big data etc. with each and every step. Agrobot is an automated machine consisting of microcontroller(raspberry-pi), Arduino, stepper motors, pumps and other software components, will take input from user regarding the crops to be grown at specific co-ordinates through an Android App/Web page and use the data related to soil profile, weather conditions required, water requirement, fertilizer requirement etc. from the cloud to grow the crop autonomously. This product will reduce the chances of human error to almost zero and could be used as a personalized bot for terrace gardening, kitchen gardening etc.

**Keywords** - Internet of Things, Data Analysis, Big Data, Raspberry-PI, Android App, Kitchen Gardening, Polycrop, Green Revolution, Agro bots.

### I. INTRODUCTION

Agriculture is the world's most important industry. Agriculture is going through growing pain as our global social change is faster than ever before. The population is rising and we are running out of resources and space. In 2012 report by the world wildlife fund, they state that humanity must now produce more food for the next 4 decades than in the last 8000 years of agriculture combined. That's a monumental challenge that we face. In a race to feed the world, 2 major paradigms have come to damage the landscape

and then Agro-Bot positions other tools very precisely in relationship to those plants in order to destroy the weeds, water the plants and even sample the soil. Hence, it can be concluded that agrobot is a robot that does the job of a farmer for those who aren't terribly interested in the actual work of gardening.

### II. METHODOLOGY

#### 2.1 WORKING

The Agrobot is a robot that moves around a small garden bed using tracks on the sides of a defined

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## Performance Analysis of 8 X 8 MU-MIMO in Uplink of LTE-A

Rajashree A. Patil<sup>1\*</sup>, P. Kavipriya<sup>2</sup> and B.P. Patil<sup>3</sup>

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(Published by Research Trend, Website: [www.researchtrend.net](http://www.researchtrend.net))

**ABSTRACT:** The 3rd Generation Partnership Project (3GPP) uses radio access technologies Long-Term Evolution (LTE), and its advanced version, LTE-Advanced (LTE-A). Release-10 of 3GPP standards is called as LTE - A. As per the definitions of the International Telecommunication Union (ITU), it will be considered as a 4G technology because of its attainable performance. LTE/ LTE-A are rising communication technologies in transit toward 5G communication systems. In this paper performance analysis of MU-MIMO is carried out in LTE-A uplink. This research work deals with investigations based on the performance analysis comparison of Turbo coded MU - MIMO in LTE-A networks using Zero Forcing (ZF) and Minimum Mean Square Error (MMSE) receiver and tap delay channel models like VehA and VehB. Uplink throughput is evaluated in terms of Signal to Noise Ratio (SNR) with antenna configuration of  $2 \times 4 \times 8$  for uplink transmissions using MATLAB simulation and compared.

**Keywords:** MU – MIMO, LTE, LTE-A, VehA, VehB, Uplink.

## Wireless Power Transfer Through Inductive Coupling For Aimds

Deepali A. Newaskar, B. P. Patil

*Abstract: For the patients with some cardiovascular diseases, implantable devices like implantable cardiac pacemakers and implantable cardioverter defibrillators play a very important role. The life of implantable device is limited by the life of battery and the size of implanted device is dependent on size of battery. More life of battery demands larger battery size. Since these devices are implanted inside the human body, they must be small in size as well as of long battery life. Wireless re-charging of such devices can only be the solution to reduce the size and increase life of AIMDs. Wireless recharging by magnetic resonance coupling in less time is expected and hence this topic is considered for more research to have uninterrupted power supply from battery. Selection of operating frequency for transfer of power wirelessly is of great concern as it requires attention towards certain guidelines as basic restrictions provided by International Commission on non-ionizing radiation Protection (ICNIRP). With lower frequencies used for power transfer, the efficiency would be less whereas with higher frequencies efficiency would be higher but with the use of higher frequencies for power transfer certain biological issues needs attention like tissue heating. In the technique of wireless power transfer, the transmitting coil is assumed to be outside the body and receiver coil is considered to be inside the human body above the pacemaker shell. The efficiency of power transfer is affected by frequency for power transfer and distance between the two coils.*

*Keywords—implantable cardioverter defibrillators, implantable cardiac pacemakers, operational frequency, wireless charging, wireless power transfer.*

Iodine battery is around ten to twelve years. If by wireless power transfer the AIMD battery is recharged then the size of the AIMD can be reduced as battery consumes more space in any implantable device than other circuitry and so the size of implantable medical device is majorly dependent on the size of battery. Patients implanted with pacemaker or any other AIMD would not required to undergo further surgical treatment which could be life threatening for replacing the unit. To avoid the surgical treatment for the second time, which can be life threatening too, wireless charging of AIMD can be the best solution.

In vitro energy supply seems to be the best solution for researchers. With wireless charging, rechargeable batteries can replace primary batteries, wherein receiving circuit on the pacemaker will receive energy through electro-magnetic induction principle from transmitter coil placed outside or on the body. The primary circuit may receive energy from either sunlight (through solar cells) or through external battery or power supply [1]-[4].

Energy transfer through electro-magnetic induction principle can be of two types, non-resonance and the magnetic coupling resonance (MCR). In both types of wireless charging systems, a transmitting coil will be placed outside the body (vitro) and the receiving coil will be placed inside the human body (vivo). Pacemaker circuitry is hermitically sealed inside a titanium alloy case since titanium is ten times stronger than steel but it is very lighter than steel and is bio-compatible with the human body. The receiving coils must be placed outside the pacemaker shell

A Hybrid Approach Combining Statistical Image Information and Image Informatics for 3D Reconstruction – Dr. B P Patil



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**Source:** Advanced Science, Engineering and Medicine, Volume 11, Number 9, September 2019, pp. 888-899(12)

**Publisher:** American Scientific Publishers

**DOI:** <https://doi.org/10.1166/asem.2019.2433>

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# Capacitors Beyond Fundamentals – Dr. P B Karandikar

The screenshot shows a web browser window displaying the article 'Capacitors Beyond Fundamentals' on the Electrical India website. The browser's address bar shows the URL [electricalindia.in/capacitors-beyond-fundamentals/](http://electricalindia.in/capacitors-beyond-fundamentals/). The website header includes the Electrical India logo with the tagline 'India's oldest magazine on power and electrical products industry' and a navigation menu with categories like Home, Resources, Power, Renewables, Transformers, Motors, Switchgear, Cable, Lighting, Allied Products, and Personalities. An advertisement banner on the right says 'Grow with us! ADVERTISE HERE!' with contact information: 'Contact @ 022-49612499 advt@electricalindia.in'. The article breadcrumb is 'Home > Allied Products > Capacitors & Condensers > Capacitors Beyond Fundamentals'. The article title is 'Capacitors Beyond Fundamentals' in a large red font. Below the title is a sub-headline: 'The article focuses on basics and some other new aspects in capacitor for various applications which needs to be relooked in to engineering education - Samata Parulekar, Prof R M Holmukhe, Dr P B Karandikar'. The date 'October 5, 2019' is shown below the sub-headline. There are social media share buttons for Facebook, Twitter, and LinkedIn. A large image placeholder is visible below the text. The Windows taskbar at the bottom shows the search bar, task view, and various application icons, with the system tray displaying the time '11:19 AM' and date '6/9/2022'.



# GWO Based Optimal Channel Estimation Technique for Large Scale MIMO in LTE Network

Rajashree A. Patil, P. Kavipriya, B. P. Patil

*Abstract: The Wireless Systems Are Employed With More Number Of Antennas For Fulfilling The Demand For High Data Rates. In Telecommunication, Lte-A (Long Term Evolution-Advanced) Is A Well-Known Technology Intended For Wireless Broadband Communication Aimed At Data Terminals And Mobile Devices. Multiple Input Multiple Output (Mimo) Technology Is Used By Lte Which Is Also Known As Fourth Generation Mobile Networks To Attain Very High Data Rates In Downlink And Uplink Channels. Though The Mimo Systems In Massive Mimo Are Provided By Multiple Antennas, The Design Of The Appropriate Non-Erroneous Detection Algorithm Is A Major Challenge. Also, With The Increase In Quantity Of Antennas, The System's Spectral Efficiency Begins To Degrade. So As To Deal With This Issue, A Proper Algorithm Has To Be Utilized For Channel Estimation. The Bio Inspired Algorithms Have Shown Potential In Handling These Issues In Communication And Signal Processing. So, Grey Wolf Optimization (Gwo) Algorithm Is Used In This Approach To Estimate The Most Optimal Communication Channel. Also, The Spectral Efficiency And Data Capacity Are Enhanced Using The Presented Approach. The Proposed Approach's Performance Is Compared With The Existing Approaches. The Simulation Result Exposes That The Presented Channel Estimation Approach Is Far Better Than Existing Channel Estimation Approaches In Performance Metrics Such As Bit Error Rate, Minimum Delay, Papr, Spectral Efficiency, Uplink Throughput, Downlink Throughput And Mean-Squared-Error.*

*Keywords: Channel estimation, large scale MIMO, LTE, channel matrix, Wireless communication, antenna, Grey Wolf Optimization, Mean-Squared-Error and spectral efficiency.*

Though LTE MIMO makes the system complex, it also is capable of providing some crucial enhancements in spectral efficiency and performance. An antenna technology for a wireless communication where both the source also known as transmitter and destination also known as receiver uses multiple antennas is known as MIMO (multiple inputs, multiple outputs). For minimizing the errors and for optimizing the speed of data, the antennas at the each end will combine. A large scale antenna systems is an extension of MIMO wherever the antenna at both ends (transmitter & receiver) are grouped together for attaining improved throughput and improved spectrum efficiency in a wireless communication system [1]. While using massive MIMO, it has features such as; TDD (time-division duplex) operation, Linear processing, Favorable propagation and scalable. In massive MIMO, it has the following challenges; Unfavorable Propagation, Pilot Contamination, New Designs and Standards are needed and Channel estimation for both TDD and FDD system protocols [2]. Channel estimation is one of the major challenges in a large scale MIMO. In base station (BS) it is necessary for valuing CSI (channel state information) for both protocols (TDD & FDD) for minimizing the overhead of the pilot and for improving the energy and spectral efficiency to enhance the overall performance of an large scale MIMO (massive MIMO) [3]. In TDD during the channel estimation process of uplink, the base station requires the CSI for identifying

The screenshot shows a web browser window with two tabs. The active tab is titled "A Low-Power Adiabatic Multiplier Based on Modified Booth Algorithm". The address bar shows the URL: [researchgate.net/publication/4315780\\_A\\_Low-Power\\_Adiabatic\\_Multiplier\\_Based\\_on\\_Modified\\_Booth\\_Algorithm](https://researchgate.net/publication/4315780_A_Low-Power_Adiabatic_Multiplier_Based_on_Modified_Booth_Algorithm). The ResearchGate logo is in the top left, and navigation links for "Recruit researchers", "Join for free", and "Login" are in the top right. The main content area features a breadcrumb trail: Home > Digital Electronics > Digital Design > Digital Systems > Engineering > Electronic Engineering > Logical Circuit. Below this, a "Conference Paper" label is present. The title of the paper is "A Low-Power Adiabatic Multiplier Based on Modified Booth Algorithm". The publication date is "October 2007". The DOI is "10.1109/ISICIR.2007.4441905". The source is "IEEE Xplore". The conference information is "Conference: Integrated Circuits, 2007. ISIC '07. International Symposium on". The authors listed are "Jianping Hu" (Ningbo University), "Ling Wang", and "Tiefeng Xu" (Ningbo University). A "Request full-text PDF" button is visible, along with a note: "To read the full-text of this research, you can request a copy directly from the authors." The Windows taskbar at the bottom shows the search bar and various application icons, with the system clock indicating 11:21 AM on 6/9/2022.



## A Fast and Optimized Architecture to Perform Multi-Bit Permutation Operation

<sup>\*1</sup>Sushma Wadar, <sup>2</sup>D S Bormane

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Received: 13<sup>th</sup> September 2019, Accepted: 30<sup>th</sup> September 2019, Published: 31<sup>st</sup> October 2019

### Abstract

The advanced bit processing operations implemented in the microprocessors and microcontrollers very inefficient. Normally programming techniques are used to emulate the complex bit-related operations. The bit manipulation functions are every now and then required in the areas that are eventually becoming very important. This paper is proposing a techniques which can directly support these bit operations in the form of multimedia shifter unit that can implement standard shifter operations in microprocessors and controllers. The design of the proposed shifter unit is based on the butterfly and inverse butterfly circuits. We show how the proposed design for new shifters can implement the standard multi-bit scatter and deposit functions found in some processors. The technique proposed in this paper for performing the two operations is based on only Mux. The design of Shifter-Permute functional unit is very challenging work towards its power consumption, speed and area. We have implemented 8-bit Shift-Permute functional unit for bit manipulation and have analyzed the proposed design with the existing design in terms of power consumption, speed and area. Here the circuits are implemented and analyzed by using VHDL and is synthesized by using Xilinx ISE and the targeted device used is Vertex 4 FPGA xc4vx15-12-sf363 and the same is reflected in the mathematical model proposed for each circuit.

### Keywords

*Control Unit, Data Reversal, Deposit, Extract, Multiplexer, VHDL.*

# Design and Implementation of Robust Navigation System Platform for Autonomous Mobile Robot

Deepak Kumar Yadav, Bharat Prasad Dixit, Pankaj Yadav, Gajanan R Patil, Jayesh Jain

*Abstract: An autonomous robot can navigate in a given region and reach to a specified location. The navigation system for these robots has to be reliable, versatile and rugged. In this paper, design and development aspects of such navigation system are discussed. A two level architecture is proposed for navigation of the autonomous robot. The low level controller (LLC) generates odometry data and implements closed loop feedback based PID algorithm. The high level controller (HLC) is used to generate velocity commands based on the path planned and inputs sensed from environment. The two controllers continuously exchange data with each other to reach the final destination. This navigation system platform can be used to develop autonomous mobile robots.*

*Keywords: Autonomous Mobile Robot, PID, Odometry, Robotic Operating System (ROS), High Level Controller (HLC), Low Level Controller (LLC).*

robots successfully moving over a rugged surface, avoid obstacles, follow a path as a coordinates given by a user. In this paper the design and simulation of reliable and robust navigation system for autonomous mobile robots is proposed. The navigation system described here is a part of general purpose mobile platform to be developed.

The rest of the paper is organized as follows. Section II gives related work in this area. Section III describes detailed architecture of the autonomous mobile robot. Section IV gives details about navigation system. Section V has discussion on implantation and testing. Finally section VI gives conclusion and future scope.

## II. RELATED WORK

The navigation problem involves various subtasks such as path planning, collision detection, search algorithms,

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## A Wavelet Based Hybrid Threshold Transform Method for Speech Intelligibility and Quality in Noisy Speech Patterns of English Language

 Springer

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International Conference on ISMAC in Computational Vision and Bio-Engineering

ISMAC 2018: [Proceedings of the International Conference on ISMAC in Computational Vision and Bio-Engineering 2018 \(ISMAC-CVB\)](#) pp 1845-1855 | [Cite as](#)

## GPU Based Denoising Filter for Knee MRI

Authors

Authors and affiliations

Shradha Oza , Kalyani R. Joshi

Conference paper

First Online: 02 January 2019



Part of the [Lecture Notes in Computational Vision and Biomechanics](#) book series (LNCVB, volume 30)

### Abstract

MRI is a popularly used technique for diagnosing muscle and skeletal disorders, especially of the knee. For accuracy in diagnosis, the rician noisy knee image needs to be filtered using efficient denoising algorithm. In recent years, the spatial neighborhood bilateral filter is being explored by researchers for its capacity to retain edges and tissue structures. It is noted that increase in image resolution slows down performance of the bilateral filter effectively discouraging its use. The research work proposes a cost-effective accelerated solution to the problem by implementing CUDA-based bilateral filter as applied to T2-weighted sagittal knee MRI slice. The work suggests use of GPU shared memory for optimized implementation and better speedup. The speedup achieved for 3.96 Mpixel knee MR image is 114.27 times more than that of its CPU counterpart. The results indicate average occupancy of 90.15% for image size of  $630^2$  pixels, indicating effective parallelization. Also, over varying rician noise levels, the average PSNR achieved is 21.83455 dB indicating good filter performance.

### Keywords

Knee MRI   Bilateral filter   CUDA GPU   Memory optimization   Occupancy index

# Optimization Of Battery - Ultracapacitor For Electrically Operated Vehicle For Urban Driving Cycle In India

Vishnu Kokate, R M Holmukhe, P B Karandikar, D S Bankar, Ms. Poorva Aparaj

**Abstract:** Depleting fossil fuels will be a major challenge in front of coming generation. This is going to hit the transportation sector heavily. Compressed air vehicles and electric vehicles are seen as viable solution for future transportation. Electric vehicle system can be implemented from small vehicle to very large transportation system like train or aeroplane. Use of ultracapacitor is inevitable in most of the electrically operated vehicle as it is the only way to supply pulse current requirement of electric motor. Electrical energy storage is as persistent problem in electric vehicle. Battery has its limitations. Use of battery- ultracapacitor combination is most viable option. Optimization of battery- ultracapacitor rating is addressed in this paper.

**Index Terms:** Ultracapacitor, Battery, Electric Vehicle, urban transportation

---



## Design and Implementation of Black Box for Security and Monitoring of Automobile

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(Published by Research Trend, Website: [www.researchtrend.net](http://www.researchtrend.net))

**ABSTRACT:** In a country with the third largest road network in the world, the total number of vehicles in India stood at 230 million out of which 60 percent are the personal vehicles. With increase in vehicles, the driving experience and safety of the commuters have become a major area of interest. Black Box are very common devices when it comes to aircraft but now, with growing atomization & traffic accidents these devices could also be used in automobile sector. The black box is a device which records all the information of a vehicle like speed, engine temperature, tire pressure, acceleration, headlight intensity, location, etc. All this data need to be stored but if the storage is on board the danger of losing it on accident was very prominent, so the data was stored on cloud by using Firebase. The other problem was placement and range of sensors as the device should work on terrains, like mountains or desserts, the sensors used must be able to withstand the various conditions it suffers. The other feature includes maintenance reminders and alerts provided for certain conditions. Maintenance reminders are used to alert the user about the vehicle servicing status, it then can be used to enhance or justify the resell value. Alerts are for parents/vehicle owners with transport corporation where the user will alert if the vehicle crosses certain limit.

**Keywords:** Low cost Black box, Servicing alerts, Global Positioning System(GPS), Monitoring, Accident Analysis, Automobile tracking



# Applications Of Ultra Capacitor In Indian Vehicles

**Vishnu Kokate, RM Holmukhe, PB Karandikar, Saurabh, Nidhi Yadav**

**Abstract:** Presently self-start two-wheelers, including motorcycles and scooters between 50 - 200 cc capacities, use standard lead-acid battery of 5, 9 and 12 Ah rating as the energy source. A battery is a well-known energy source, but it cannot supply a large amount of power in a short time. The size of the battery is decided based on the starter motor requirement. Further, deep discharge at the time of cranking reduces the life of the battery drastically as compared to normal use. Also, an extra factor of safety is provided for cold weather cranking performance, poor maintenance and end of life performance in view of deep discharge. Hence the battery becomes heavy and bulky. On the other hand, Ultra-capacitors can supply a large burst of power for short time but cannot store much energy, hence a limited number of starts. Decentralized Ultra-capacitors network is another major advantage in the future of automobile sector.

**Index Terms:** Battery, Solar-Panel, Self-Start, Ultra-Capacitors, two-wheeler, Decentralized Network,

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# Smart Municipal Solid Waste Management- Dr. Surekha K S

SMART MUNICIPAL SOLID WASTE MANAGEMENT


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[Patil et. al., Vol.8 (Iss.4): April 2020] ISSN- 2350-0530(O), ISSN- 2394-3629(P)  
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**SMART MUNICIPAL SOLID WASTE MANAGEMENT**

Ashwini Patil <sup>\*1</sup>, Swati Jha <sup>2</sup>, Uma Kumari <sup>3</sup>, Surekha KS <sup>4</sup>   
<sup>\*1, 2, 3, 4</sup> Department of E&Tc, AIT, Pune, India

**Abstract**

Municipal Solid Waste generated by India in urban areas is 62 million tonnes. Only 70% of the total waste is collected and 20% is treated. Most of the solid waste is dumped in landfill sites. This paper targets the reduction in the size of the solid, particularly wet waste. Similar problems have been tackled in other parts of the world. We propose a solution that fits the Indian context. The key idea of Smart Municipal Solid Waste Management system (SMSWM) is to allocate a weekly garbage limit per household in a residential society. The DSS (Decision Support System) designed for this purpose allows the authenticated user to access the smart dustbin. The smart dustbin is equipped with the electronic circuitry where the weight of the garbage in the bin is measured and the value is updated in the database. The database of the families will be created and maintained by the municipality. A web portal gives the involved people and authorities access to the related information. A house is penalized for every kilogram more than the allotted garbage weight limit. Further enhancements are explored. Thus, the residents are incentivized to produce lesser waste.

**Keywords:** Waste Management; Wet Waste; Weight of the Garbage; Database; Electronic

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# IoT Based Food Monitoring System In Warehouses - Dr. Surekha K S

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## IoT BASED FOOD MONITORING SYSTEM IN WAREHOUSES

Shivani Bhandari<sup>1</sup>, Pooja Gangola<sup>2</sup>, Shivani Verma<sup>3</sup>, Surekha KS<sup>4</sup>

<sup>1,2,3</sup>B.E Student, E&Tc Department, AIT, Pune, Maharashtra, India  
<sup>4</sup>Faculty, E&Tc Department, AIT, Pune, Maharashtra, India

\*\*\*\*

**Abstract** - Warehouses are used by producers, middlemen, traders, customers etc. Every year, farmers face a huge loss due to the problem of storage requirements in warehouses. This is due to improper monitoring of the food stored and the inability to provide proper refrigeration systems. Various traditional storage methods were initiated which forced a huge manual approach which is time-consuming and inefficient. This paper presents a smart IoT based food monitoring system in warehouses using Raspberry pi and various sensors that continuously monitor the various factors which may affect the food quality. The ThingSpeak is used as a cloud that helps in the visualization of data. A database is maintained using Mysql and a login page is created which helps the warehouse administrator for the continuous surveillance of temperature and humidity.

**Key words:** Food monitoring, IoT, Sensor.

### 1. INTRODUCTION

India is the country where the agricultural sectors play a major role in the economy. Every year farmers face numerous problems due to the storage requirements, lack of proper monitoring of the food stored. Warehouses are used for storage purposes. Only a small part of the food grains are stored in the state run [1] warehouses. A large part of the crops is left without proper storage facilities. The global production includes maize, wheat and rice. But due to the fluctuations in the market supply both from one season to next and from one year to next, the losses that the country faces every year due to improper storage is about Rs.50,000 cores in monetary terms.

There are various environmental factors that influence the natural contamination of food grains such as type of storage structure, pH, moisture, temperature, sufficient light, humidity, etc. As the storage time increases, the food will lose its value. This results in the problem of food safety. [2, 3]. Various traditional storage methods were initiated which forced a huge manual approach and requires more time and is also less efficient. Another drawback was the absence of a multi-parameter monitoring

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# IoT based Animal Monitoring System

Shriya Nagrath<sup>1</sup>, Surekha K S<sup>2</sup>, Sadhika Parashar<sup>3</sup>, Preeti Kumari<sup>4</sup>

<sup>1</sup>Oracle, Bangalore, <sup>2</sup>AIT, Pune

<sup>1</sup>Shriya.nagrath@oracle.com, <sup>2</sup>surekhakshegde@gmail.com

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## **Abstract**

The rate of loss of cattle due to various reasons like Stealing of herd, Attack by wild animals, Getting lost in dense forests, falling into rivers and ditches, etc. are predominantly increasing. These factors can be controlled or eliminated using tracking. This paper aims at achieving a viable solution to herder's problems of managing a large herd. We intend to minimize the loss of cattle and reduction of workload of herders. It is an inspiration from multiple international research papers and already implemented farm automation. Using this setup a herder can remotely monitor his/her cattle. He/She can monitor the cattle's heart rate and position. In case of an emergency, an alarm would be put off.

**Keywords;** *wildlife monitoring, ESP8266 wifi module, heartbeat sensor, python, data analytics.*

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# Secure Radio Frequency Transmission for Paperless Voting System

Anshu Banerjee, Ananya Tewari, Renuka Bhandari

*Abstract: In any democracy, elections play an important role. If the traditional Electronic Voting Machine (EVM) is secured by encryption, it could be made more reliable. Traditional voting process provides security through the use of a paper audit trail which is not environment friendly making it unfit for use in the long run. This paper proposes the use of Blowfish algorithm for encryption along with secure transmission using radio frequency and verification of the cast vote. In this approach, the cast vote is encrypted using Blowfish encryption algorithm and transmitted to the server through radio frequency. At the server, the data is decrypted and sent back to be displayed on the screen of the EVM, eliminating the paper audit trail. This approach will account for a considerable amount of cost reduction without compromising on the security and sanctity of the election process.*

*Keywords: Blowfish algorithm, encryption, radio frequency, decryption, cloud*

Officer who watches the CU while the voting compartment houses the BU. Instead of issuing the ballot papers, the Polling Officer who is in-charge of the CU releases a ballot by pressing the Ballot Button on the CU. The voter then casts his vote by pressing a blue colored button on the BU against the candidate and symbol of his choice. In this way, the possibility of casting an invalid vote is completely eliminated as opposed to paper ballot system where invalid votes were cast in large numbers. This has enabled EVMs to reflect a more authentic and accurate choice of people. EVMs, also reduce the printing of millions of ballot papers needed for every election, and make the counting process very quick (result can be declared within 3 to 5 hours as opposed to 30-40 hours, on an average, under the conventional Ballot paper system).<sup>[2]</sup>

# A Novel Architecture for Multi-Bit Shift and Rotate Operation – Mrs. Sushma Patil, Mr. Avinash Patil

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## A NOVEL ARCHITECTURE FOR MULTI-BIT SHIFT AND ROTATE OPERATION

Sushma Wadar<sup>1</sup>, D S Bormane<sup>2</sup>, S C Patil<sup>3</sup>, Avinash Patil<sup>4</sup>

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Corresponding Author: Sushma Wadar  
Email: sushma97in@yahoo.co.in

<https://doi.org/10.26782/jmcs.spl.9/2020.05.00003>

### Abstract

*In the available microprocessors and microcontrollers, the multi-bit operations are implemented with very less efficiency. Generally, these complex bit operations are emulated using programming logic. These bit manipulation operations are frequently required in the applications that are becoming very important. In this paper, we propose two new techniques which can directly support these bit operations in the form of shifter unit that can implement standard shifter operations in microprocessors and controllers. The design of the proposed shifter unit is based*

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# Square Operation Implementation on Reconfigurable Hardware Logic to Attain High Speed, Area Optimization and Low Power Consumption - Mrs. Sushma Patil, Mr. Avinash Patil

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# A Review on AI based predictive Battery Management System for E-Mobility – Dr. B P Patil

The screenshot shows a web browser displaying a ResearchGate article. The browser's address bar shows the URL: [researchgate.net/publication/341778248\\_A\\_Review\\_on\\_AI\\_based\\_Predictive\\_Battery\\_Management\\_System\\_for\\_E-Mobility](https://researchgate.net/publication/341778248_A_Review_on_AI_based_Predictive_Battery_Management_System_for_E-Mobility). The ResearchGate logo and navigation links are visible at the top. The article title is "A Review on AI based Predictive Battery Management System for E-Mobility". It is dated May 2020 and published in *Test Engineering and Management*, 63(3):15053 – 15064. The authors listed are Satyashil Nagarale (Pimpri Chinchwad College Of Engineering) and B P Patil (Army Institute of Technology). There are buttons for "Download citation", "Copy link", "Download full-text PDF", and "Read full-text". Below the article information, there are links for "Citations (1)", "References (32)", and "Figures (2)". The abstract and figures section is partially visible, starting with "The advancement in digitalization and availability of reliable sources of information that provide credible data. Artificial Intelligence (AI) has emerged to solve complex computational real life problems which was challenging earlier. The Artificial Neural Networks (ANNs) play a very effective role in digital signal processing. However, ANNs need rigorous main processors and high memory bandwidth, and hence cannot provide expected levels of performance. As a". A blue banner for ResearchGate is also present, stating "Discover the world's research" with statistics: "20+ million members" and "135+ million publications". The Windows taskbar at the bottom shows the search bar and various application icons, with the system clock indicating 11:34 AM on 6/9/2022.




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**Use of Discrete Sumudu Transform in cryptography**

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**ABSTRACT**

*Cryptography is a method of protecting information and communications through the use of codes, so that only those for whom the information is intended can read and process it. Modern cryptography uses sophisticated mathematical equations (algorithms) and secret keys to encrypt and decrypt data. Today, cryptography is used to provide secrecy and integrity to our data, and both authentication and anonymity to our communications. In this paper we have to encrypt and decrypt a secret data using discrete Sumudu transformation and congruence modulo operator relation.*

**Keywords**— Engineering, cryptography, encryption, decryption, Modern Sciences

**1. INTRODUCTION**

Cryptography is technique of securing information and communications through use of codes so that only those people for whom the information is intended can understand it and process it. Thus preventing unauthorized access to information. More generally, cryptography is about constructing and analyzing protocols that prevent third parties or the public from reading private messages, various aspects in information security such as data confidentiality, data integrity, authentication, and non-repudiation are central

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S.K. Bajpai<sup>a</sup>, Aniteshma Chanpuria<sup>a</sup>, Seema Dubey<sup>b</sup>

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36 **Women Education In The 21st Century In India :Women Empowerment And Gender Equality**  
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37 **Extrapolation of data by mathematical calculation for removal of Fluoride, Arsenic, Lead by Non-conventional (NLP, PLP, ALP) absorbents**  
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