

## An ArmurMimus multimodal biometric system for Khosher authentication

Gayatri Umakant Bokade ✉, Rajendra D. Kanphade

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### Abstract

One of the basic requirements of our modern day society is personal authentication. Biometric recognition should make a human-like identity determination by identifying its physiological and/or behavioral characteristics. In comparison to traditional knowledge-based approaches, biometric identification systems have the potential to bring benefits. However, because of the difficulties in extracting non-class discriminative features, the lack of protection during storage of extracted features, and poor recognition accuracy, most frequently used biometric systems lack model protection and robustness. This research proposed a Mimus multimodal biometric system focused on the combination of multiple modalities and optimal level fusion of features to resolve these problems. Initially, the novel Blob-funk method extracts the complementary non-class discriminatory information among different modalities, which accomplishes the biometric data enrollment. Thus, it extracts the different properties by comparing surrounding regions based on finding the local maxima and minima of the function. After extracting the features, they need to be stored in a secure manner in a database. Therefore, the paper incorporates the new code block protection strategy to achieve an effectual protection of continuous monitoring via the generation of non-invertible features, which is used to create the templates, thus storing them in a database. Finally, the novel Lucynomial logistic regression system incorporates user authentication and thus achieves greater recognition accuracy through estimation of threshold value with confrontation of spoof attacks. Hence, compared to the existing techniques such as SVM, PCA, and DBN, the outcome of the proposed work attains 97.53% accuracy, 0.020% FAR, 96.44% recall, and 97.85% precision, thus exemplifying the competence of the novel system.



# DATA AVAILABILITY STATEMENT

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# Template security scheme for multimodal biometrics using data fusion technique

Gayatri U. Bokade and Rajendra D. Kanphade

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## Abstract

The emerging demand of biometric technology across the globe has given rise to the development of various biometric systems involving multiple traits. The multimodal biometric authentication systems are considered to be more precise and protected as compared to unimodal systems. But when it comes to the stolen or hacked biometric template, even the best designed multi-biometric structure fails to prevent an intruder's entry in the system. In today's digital era where biometric systems are being used for security and access control due to their uniqueness, there is a must to ensure production of highly protected template. This research work proposes fused multimodal principal component (FMPC) method to generate a secure template by using data fusion technique for three biometric traits-face, palmprint and ear. The security of the template is tested by implementing various attacks. A feedback routine is instigated to sense and prevent worst case attacks like noise. The proposed method yields promising results.

## Keywords

template security, fused multimodal principal component, FMPC, attack, face, palmprint, ear

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# Insect Classification and Alert System Using CNN

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**ABSTRACT** : Humans, Animals, Plants and Insects are the close integral part of our ecosystem. As insects certainly affects the human lifestyle as insect borne diseases are taking more than 0.7 million lives every year. Traditional counter measures to tackle the insect borne diseases are performed after the cases of particular diseases starts reporting in the area. Presented paper provides an automated system for classification of harmful insects and alerting through sms. Proposed model uses Convolutional Neural Network(CNN) for classification, CNN model trained in the proposed system achieves accuracy of 82 % on 15 different classes. Image database for the following experiment was taken from Kaggle and IP102 datasets. TensorFlow, Keras and OpenCV trained model will detect the insect present in the image and will send the alert message to the saved phone number.

**Keywords** – CNN, Insects, Pest, Image Classification, vector borne

## I.INTRODUCTION

From existence of human kind to today, humans are battling with the insect borne diseases and effects of pest on agriculture. While there are multiple ways to tackle this problem, those are the counter measures taken to stop the spread of the diseases. And the spread of the diseases is taken into account after number of cases starts to show up. In some agricultural cases it spreads so fast that chances are major part of the crops in the field will be degraded until some action taken onto them. This delays to take some counter measures sometimes leads to pressure on medical system and low market in crops cases. Proposed system aims to alert the respective person/committee to take counter measures even before the diseases starts to spread. Proposed system focuses on insects which are harmful to humans and pests which leads to destruction of crops. Major part of insects species are some which are attracted towards the UV based photocatalytic trap as it proven to be effective than others [1]. Study [1] shows effectiveness of photocatalytic trap where pollutants are present compared to complex systems requiring heavy load work. When insect detected system is trained to send alert to the respective person informing about the insect details. Another advantage of proposed system is if the harmful insects are less in population, they will be eliminated by trap itself. System deals with the multiple types of insects and pest, for this problem system uses CNN to classify the insects over the other image classification techniques. [5] Proposed systems outcomes an alert message to the respected person, when any harmful insect is trapped inside the trap and has been detected by the model. CNN uses audio form of input and visual form of inputs, as the proposed system is to be deployed in outdoor areas, there exists a noise which will affect the quality of noise generated by insects, due to this problem using visual data approach is more reliable. Data used in training the model is gathered from various sources such as Kaggle, Google and dataset IP102.





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# Exploratory Analysis of Kidney Disease Data Set—A Comparative Study



Aniket Muley and Sagar Joshi

**Abstract** In this study, an applied and comparative study approach is proposed with a decision tree and random forest method. Here, secondary data associated with kidney-related disease was employed. Study explores that random forest is efficient as compared with decision trees. It is recommended that, in the future, random forest methods will be more fruitful in the classification related to the kidney patients.

**Keyword** Data mining · Chronic kidney disease · Decision tree · Random forest

## 1 Introduction

Nowadays, kidney disease patients are more in India. The functioning of it and causes associated with it are found in large scale in the nearby area. The main interest is to identify the major parameters that can cause chronic pains to patients. Therefore, developing a model to identify the disease can help the people to take precautions by identifying symptoms and overcome from the chronic disease earlier stage.

Various researcher works on the problems with different perspective. Some of the reviews are: Ahmed et al. [1] discovered that chronic kidney disease (CKD) is generally found in South Asian and in black skin people as compared to general population. They observed that it is due to diabetic people in south Asia and having maximum risk. Apart from that, other issues, viz. blood pressure, heart problems, family suffering from the same disease, it is more frequently observed during the age group of 60 and above. Data mining can be defined as a process of digging out until that time unidentified compelling and actionable information from big data and then using the information so derived to make vital tasks in industry and tactic judgment [2].

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Article

# Design and Analysis of a Voltage-Mode Non-Linear Control of a Non-Minimum-Phase Positive Output Elementary Luo Converter

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**Abstract:** The positive output elementary Luo (POEL) converter is a fourth-order DC–DC converter having highly non-linear dynamic characteristics. In this paper, a new dynamic output voltage feedback controller is proposed to achieve output voltage regulation of the POEL converter. In contrast to the state-of-the-art current-mode controllers for the high-order boost converters, the proposed control strategy uses only the output voltage state variable for feedback purposes. This eliminates the need for the inductor current sensor to reduce the cost and complexity of implementation. The controller design is accompanied by a strong theoretical foundation and detailed stability analyses to obtain some insight into the controlled system. The performance of the proposed controller is then compared with a multi-loop hysteresis-based sliding-mode controller (SMC) to achieve the output voltage-regulation of the same POEL converter. The schemes are compared concerning ease of implementation, in particular, the number of state variables and current sensors required for implementation and the closed-loop dynamic performance. Experimental results illustrating the features of both controllers in the presence of input reference and load changes are presented.

**Keywords:** Luo converter; output feedback control; hysteresis control; sliding mode control

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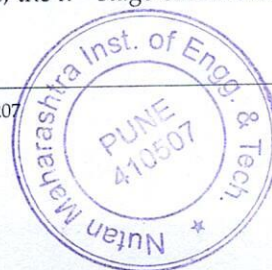


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## 1. Introduction

DC–DC converters are widely used in various commercial applications such as electrical vehicles (EVs), hybrid electrical vehicles (HEVs), renewable energy power systems, power supplies for computer periphery and car auxiliary, and so on [1–4]. For instance, power electronic circuits (PECs), which are an integral part of any modern-day electrical vehicle, usually comprises DC–AC inverters and DC–DC converters. A DC–AC inverter caters to various utility loads, such as air-conditioning systems, whereas a DC–DC converter is used to supply conventional low-power, low-voltage loads such as sensors, controls, entertainment, utility, and safety equipment, etc. [5]. Secondly, most of the renewable energy resources (RERs) produce a DC voltage of a small magnitude. Thus, a high-step-up DC–DC converter can be used before interfacing RERs with the grid. Additionally, considering the growing number of DC loads in various applications such as microgrids and EVs, it preferred to have a DC distribution system including DC–DC converters than its AC counterpart [6–8].

In many such applications, DC–DC converters are required to provide a good output voltage regulation against load and line variations, as well as the circuit parameter uncertainties. Among them, the positive output Luo converters are a series of DC–DC converters which were developed from the prototype using the voltage-lift technique [9]. In the main series of Luo converters, the  $n^{\text{th}}$  stage circuit has a single active switch,  $n$  inductors,  $2n$







## PCMC water 24\*7

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**Abstract:** — Android is an open and free operating system based on Linux, which is mainly used for mobile terminals, such as smart phones and panel computer. It is developed by Open Handset Alliance composed of more than 30 technology companies and mobile phone companies. Android tries to allow users experience the best service quality, and allow developers get a more open level for more convenient software developing. Thus mobile applications with more convenient functions can be developed via Android. This paper firstly presents the architecture of Android platform, including the classes and methods in developing. Then we takes audio/video file procurement as an example to introduce the Android program design and development, including classes application, program design, development and analysis.

Water is one of the most important commodities which man has exploited than any other resource for sustenance of life . Most of the water on this planet is stored in oceans and ice caps which is difficult to be recovered for our diverse need . The total amount of water on surface of earth is  $3.5 * 10^{20}$  gallons of which is 97 % is found in sea water while fresh water is only 37 million  $km^3$  . Of this 0.8% occurs in polar ice water while percolates in ground is called 'Ground Water ' and it emerges on surface of earth as liver or lake . These are the calculations of amount of water or water sources available for humans . But even though we aren't able to use this whole water as there is factor of pollution also . The common sources of water pollutions can range from purely natural to several man-made sources like discharge of domestic wastes , industrial wastes(e.g. waste due to sugar factory , Dairy Industry , pulp and paper industry , Textile industry , petroleum Refining , fertilizers , Metal Plating Industry , tanneries , Distilleries , pharmaceuticals , rubber industry , coal washeries) , agriculture wastes etc .

Inspite of all these things we are wasting water heavily . The aim of these application is to aware the people about water wastage and to give them information about their water meter number , water timings , pressure and to raise query regrading their water supply digitally using the platform of this application . So that they can use the water in efficient way without wasting it.

**Keywords:** *Agriculture; Android Application, Pimpri-Chinchwad Municipal Corporation, Water etc.*

### I. INTRODUCTION

Recently, agriculture is the fundamental source of food industry. It is one of the oldest and most important economic activities which is being practiced in the world wide since thousands of years. Its development has taken over the period of many years with the emergence of new technology, equipment, techniques of farming and domestication. Huge advancement and growth can be seen in this sector with the time period. This sector, not





## Problems with Traffic Signal Scheduling in Heterogeneous Traffic Networks

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**Abstract** - The idea is to create a traffic light system that varies depending on the number of people present. The signal time adjusts automatically when there is a lot of traffic at an intersection. Many large cities across the world have heavy traffic, making it difficult to travel to work on a daily basis. Traditional traffic signal systems work on the assumption that each side of an intersection has a certain amount of time. They can't be altered to accommodate increased traffic. The times of the intersections that have been put up for them cannot be changed. There may be more traffic at one intersection, making the regular green time more difficult to terminate. Following the processing and . A threshold is defined and a contour is drawn to illustrate how many automobiles are in the region after translating the traffic signal object recognition into a simulator. We can figure out which side has the most cars based on the signals given to each side and the number of cars.

**Keywords:** CNN, Machine Learning, preprocessing, classification, self-driving, traffic signals, deep learning, detection

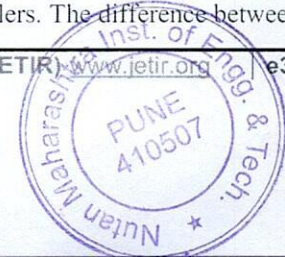
### 1. INTRODUCTION

In many areas, particularly those with growing populations and large cities, traffic control and management are critical concerns. To relieve congestion at junctions, traffic lights employ time division multiplexing. At all signalised junctions in various countries, fixed-cycle controllers are used. The only

drawback of using a traffic light is the time it takes you to get to your destination (stop time or waiting time). A traffic signal controller's efficiency is measured by the time it takes to reach an intersection. Traffic signal phases, sequence, and timing all contribute to the efficiency of traffic movement across an intersection. In charge of phases, sequencing, and timing is the adaptive signal controller. When it comes to reducing traffic congestion, the timing and sequence of traffic signals must be optimised. Traffic signal timing is difficult and blind due to unpredictability and a multitude of other factors. The purpose of this study is to develop a real-time adaptive controller that can improve the timing and sequence of traffic lights.

The standard fixed-time controller and the real-time adaptive controller are the two types of traffic light controllers. A predetermined cycle time is used by the fixed-time controller, which is based on prior knowledge of traffic flow. The cycle time is the time it takes to complete a full rotation, including all green intervals, as well as change and clearance intervals. Fixed time control has the benefit of being straightforward, but it has the downside of not adapting to changing traffic conditions. Adaptive controllers use sensor input to activate a change in cycle time and/or phase sequence. Vehicle flow and wait length are measured by electronic sensors placed in the pavement or photos, as shown in [1]. [2] presents a fuzzy controller as a solution to the problem. Traffic signal timings and phase sequence are controlled dynamically based on traffic density and delay on each approach to a single intersection by this controller.

To pick the next phase and whether or not the current phase's green duration should be extended, two if-rules-based functions are employed. When there is a lot of traffic, the simulation fuzzy fixed controller. Fixed time controllers and fuzzy logic controllers are two very different types of controllers. The difference between the





# Object Detection and Image Segmentation

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**Abstract:** Object detection is one of the most basic and central task in computer vision. Its task is to find all the interested objects in the image, and determine the category and location of the objects. Object detection is widely used and has strong practical value and research prospects. Applications include face detection, pedestrian detection and vehicle detection. In recent years, with the development of convolutional neural network, significant breakthroughs have been made in object detection. This paper describes in detail the classification of object detection algorithms based on deep learning. The algorithms are mainly divided into one-stage object algorithm and two-stage object algorithm, and the general data sets and performance indicators of object detection.

Image segmentation plays an important role in a pre-processing phase of images having as objective a partition of the image into components or regions of interest for a more detailed analysis of one or more of these regions. Image segmentation may also be used as a pre-processing phase for a better image de-noising or de-blurring that will be done in a separate image processing phase. In this article we study mostly theoretical concepts and some experimental results for evaluation of some image segmentation techniques and their role for a better analysis of image details.

## INTRODUCTION

Image processing is among the rapidly growing technologies today. It helps to improve images for human interception. here the required specific toolkit is used for the analysis and recognition of image and ensure the effective Development of application through it.

Object recognition is collection of related computer vision task that involves activities like identification object in digital Photographs. Here the two task Object localization and image classification are combined to predict the class of an object in an image and to draw bounding box around the detection object here the basic process is

Input: An image which consist od one or more object such as photograph

Output: One or more bounding boxes.

One of the further extensions to this breakdown of computer vision tasks is object segmentation, also called "object instance segmentation" or "semantic segmentation," where instances of recognized objects are indicated by highlighting the specific pixels of the object instead of a coarse bounding box. From this breakdown, we can understand that object recognition refers to a suite of challenging computer vision tasks.

Humans can detect and identify objects present in an image. The human visual system is fast and accurate and can also perform complex tasks like identifying multiple objects and detect obstacles with little conscious thought. The availability of large sets of data, faster GPUs, and better algorithms, we can now easily train computers to detect and classify multiple objects within an image with high accuracy. We need to understand terms such as object detection, object localization, loss function for object detection and localization, and finally explore an object detection algorithm known as "You only look once" (YOLO).

Object recognition refers to a collection of related tasks for identifying objects in digital photographs. Region-based Convolutional Neural Networks, or R-CNNs, is a family of techniques for addressing object localization and recognition tasks, designed for model performance. You Only Look Once, or YOLO is known as the second family of techniques for object recognition designed for speed and real-time use.

## BACKGROUND

The aim of object detection is to detect all instances of objects from a known class, such as people, cars or faces in an image.

Generally, only a small number of instances of the object are present in the image, but there is a very large number of possible locations and scales at which they can occur and that need to somehow be explored.

Each detection of the image is reported with some form of pose information. This is as simple as the location of the object, a location and scale, or the extent of the object defined in terms of a bounding box. In some other situations, the pose information is more detailed and contains the parameters of a linear or non-linear transformation.

For example, for face detection in a face detector may compute the locations of the eyes, nose and mouth, in addition to the bounding box of the face.





# Characteristics Verification of DC- DC Buck Converter Using Nonlinear Controller with the PI Controllers

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**Abstract:** In this project buck converter is simulated with variety of existing linear controllers like PI and PID. After analyzing the performance of buck converter from many papers it was found that nonlinear control sliding mode control can be used with buck converter. The performance of buck converter has been studied and is undertaken for their theoretical verification, graphical representation and Matlab simulation. From the linear controller PI, non linear controller sliding mode control (SMC) is taken as control method. As the concepts of linear controllers PI and PID are known to us, the concept of sliding mode control (SMC) is explained in detailed.

**Keywords:** SMC (Sliding Mode Control), PI and PID Control

## I. INTRODUCTION

DC –DC converter convert DC voltage signal from high level to low level signal or it can be vice versa depending on the type of converter used in system. Buck converter is one of the most important components of circuit it converts voltage signal from high DC signal to low voltage. In buck converter, a high speed switching devices are placed and the better efficiency of power conversion with the steady state can be achieved. In this project work performance of buck converter is analyzed. The circuit may consist of nonlinearity like delay, hysteresis etc. and because of this output voltage is not constant. To settle the output voltage within minimum settling time and less overshoot different types of controllers are considered such as linear controller PI, PID and in nonlinear controllers SMC (sliding mode controller).

This project deals with comparison of performance of DC-DC buck converter using controllers PI, SMC. The performance of buck converter has been analyzed in many papers amongst them papers [1][2] have been studied and are undertaken for their theoretical verification, graphical representation and Matlab simulation.

Buck converter is consider with different types of controller and for each type of controller rise time, settling time and peak overshoot , loading effects etc. are studied, and its performance is analyzed. The objectives of this project are listed below,

- To study the concept of buck converter.
- Literature survey for buck converter with PI , PID and SMC .
- To study the concepts of non linear controller sliding mode control,
- To simulate buck converter with different types of controllers for finding performance of circuit. This simulation will be carried out on matlab platform with Simulink as it user interface
- To compare performance response of PI,

## II. BASICS OF SLIDING MODE CONTROL (SMC)

A Variable structure system (VSS) is theory which is applied to system to study the behaviour of system during the transient, according to a preset structure control law, to achieve the control objectives. The instant of time, at which the control action of changing the structure occurs, are not determined by a fixed program, but in accordance with the current state of the system. This property distinguishes variable structure systems (VSS) from programmed controllers.



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## ONLINE REVIEW DETECTION SYSTEM – A SURVEY

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### ABSTRACT

A lot of work is done on this particular topic which majorly deals with Sentimental Analysis part. Internet reviews are becoming a medium to judge a products quality, durability, life and many more. Right from the object like a pen to your pair of glasses or the electronic gadgets. To invest in something or not is the primary question one needs to deal with. The current systems are lacking with the accuracy, which needs to be appropriate as it matters. In this paper we are trying to categorize the users review based on different machine learning algorithms, where we apply them on the data set which is collected from Internet sites and also proposing a model to improve the accuracy compared to the existing system.

**Keywords:** Sentimental Analysis, Supervised Classification, Review Detection

### INTRODUCTION

When customers want to make a decision about a service or a product, reviews have become the primary source of information. When customers take the initiative to book for a hotel, they read reviews on other people's opinions before booking a hotel. Customers, who have already used the hotel's services, judge the service they experienced. Depending on the previous responses, they decide whether or not to book a room based on the reviews and rating. If they do, they most likely received Real feedback from the reviews and continue to book the room. As a result, the hotel gets a business and one gets a shelter with good services. Since reviews are regarded as form of sharing genuine feedback on either positive or negative services. Today people have a big number of choices, even varieties have sub varieties. On what basis one should decide. As today E-Commerce is becoming people's favorite choice, without knowing physically how something exists, people invest, just by having a look at the reviews, so by this we can get the depth of how today business can get shape. In this paper we are showing the amount of work done till now and proposed work we are going to do. In our proposed system we are using SVM(support vector machine) and NB (Naive Bayes) algorithm to improve the accuracy.



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# Smart CCTV Camera using Machine Learning

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**ABSTRACT:** In today's world, safety and security are key issues. People use security devices to protect their property, whether it is their home or their business. Perimeter of Smart cctv cameras are security systems that uses camera sensors for motion detection and video surveillance. This initiative attempts to provide one such solution for ensuring property safety and security. We propose a smart CCTV system with intrusion detection and many more features in this study. For streaming and monitoring, Cameras have been mounted in various locations. The feature of our surveillance system is Theft protection, Identity watch-out, Motion detection into a rectangle zone, Noise detection, In-Out intruder image capturing, Face mask detection, Video recording feature list saving image into their respective folders for review purpose using Machine Learning algorithms.

**KEYWORDS:** COVID-19, Learning Face Mask Detection, masked facial recognition, Smart CCTV, CCTV, Camera based security systems, Face Detection using Machine Learning, Camera Based Security Systems, Security Devices, Video surveillance.

## I. INTRODUCTION

The goal of the project Smart CCTV camera surveillance system is to improve the CCTV camera-based security systems that are currently in use in various locations. Wireless technology was used to design the project security system using CCTV cameras. The deployment of an image detection and video surveillance system is becoming increasingly crucial. An embedded surveillance system is commonly employed in the house, workplace, or factory for image processing and traffic monitoring, but this design necessitates a high-performance core, which negates some of the benefits of embedded systems, such as low power consumption and low cost. Using machine learning algorithms, the theft and face identification is most prior to the surveillance system.

## II. RELATED METHODOLOGY

The training data consists of 1300 data points, and the validation set consists of few hundred data points, both produced experimentally from testing. For each experimental point, these data set is sent to a CCN computational model for further processing of the image datasets provided, after which the output frame is displayed on the screen. Between the tests it is important to let the test environment stabilize to minimize noise and unwarranted external factors. This waiting takes several minutes due to the size of datasets and the points translate to several days of testing. Before creating a machine learning model, the usefulness of the data must be evaluated.

### Relevant?

Can we assume that the input data cause any impact to the output? In this case it is safe to make this assumption. That the eccentricity of the system to identify an image intuitive. An example of irrelevant data for the machine learning model would be time stamp of each experiment since the condition were made identical between each run.

### Accurate?

It is harder to evaluate the accuracy of the data since no measurement error is provided. The input data is assumed accurate since they are chosen and display little deviation

### Size of Data?

Do we have enough data points to train a reliable and accurate databased model? This depends on the complexity of the system's behavior, if we have a perfectly linear single-input-single-output case, fewer data points could be enough.





# LIVER DISEASE PREDICTION BASED ON GRID SEARCH AND RANDOM FOREST CLASSIFICATION

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**Abstract**—The Medical field is “data rich” and “knowledge poor”. This research proposes a Clinical Decision Support System to process this data and early diagnosis of some physiological conditions. With the help of various Machine Learning Techniques we ought to design a CDSS that will assist the doctor to predict disease correctly and thus it may be helpful for patients. This system focuses on to diagnosis of the Liver Diseases. The proposed System uses Decision Tree, Random Forest, Naïve Bayes and Support Vector Machine Algorithms for Classification. Finally the proposed system calculates and compares the accuracy of all the four models and demonstrates the best accuracy model for diagnosis of Liver related Diseases. (Abstract)

**Keywords**—clinical decision support system, patient diagnosis, medical information system, liver disease classification, decision tree optimization, grid search.

## I. INTRODUCTION

Since last two decades, notable advancement has been observed in health monitoring systems inclusive of miscellaneous sectors such as general medicine, clinical decision support system (CDSS), intuitive devices, smart alarm supervising and computer aided diagnostic systems [2]. CDSS provides clinicians, patients, or individuals with knowledge and person-specific or population statistics, intelligently strained information which will strengthen health process with better individual patient supervision as well as better inhabitant's health.

According to the annual report published by organization of pharmaceutical producers of India in year 2016 [12], following facts about healthcare came into light,

- 1) India has 20% of world disease burden. Every 1 in 5 patients worldwide with infectious diseases and Non-communicable disease is an Indian.
- 2) Only 4.4% of India's gross domestic product is spent on healthcare. 62% of expenses are out-of-pocket. Only 1 in 5 Indians is covered by health insurance.
- 3) India is being called as diabetes capital of the world, there is 123% increase in rate of diabetes which leads to 50% increase in deaths due to diabetes.

Accordingly India needs to take lead and drive patient empowerment system which will accelerates understanding of

complex diseases at the molecular level and will provide an integrated environment for analysis of large sets of clinical information and hence forth decreasing India's disease burden. At national level, there is an increasing trend towards usage of open data from government institutions around the world [3]. The healthcare expenditure can be reduced by using efficient and collaborative health monitoring systems. Thus the old world of limited electronic content with even more limited access to medical data had ownership issues but now new culture which provides ubiquitous content, ready access to critical information has been emerging. This cultural shift now can be used to solve the many ills of the healthcare system.

There is a massive need of early diagnosis systems from patients as well as medical practitioner's perspective as early diagnosis provides decision making ability and can potentially be life-saving. The life span of patients suffering from disease might be increased if they are diagnosed in early stages through discoverable symptoms. While considering liver disease, early discovery through symptoms gives various insights like stage of disease, risk factor and damage conditions. Discovery of liver disease is somewhat tricky as partially damaged liver functions nearly like normal functioning.

## II. DATASET DESCRIPTION

The dataset from Machine Learning Repository of University of California, Irvine [6] belongs to patients from north east of Andhra Pradesh, India. Total 583 patients were recorded in dataset with liver disease related parameters, 416 patients in dataset are suffering from chronic liver disease and 167 are safe from disease. Data samples are normalized for efficient predictive analysis. Dataset size is quite less which restricts the use of the ensemble methods but random forest algorithm [8] along with the techniques like oversampling, cross-validation and grid search combined with ROC testing makes efficient prediction of disease. In the Table I features or attributes of Indian Liver Patient Dataset (ILPD) [6] has been specified with their respective parametric range of values.



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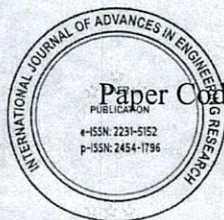
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## A NEW HYBRID DATA ENCODING APPROACH FOR LIGHTWEIGHT DEVICES IN FUTURE NETWORK USING ELLIPTICAL -RSA

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**Abstract:** The Internet of Things (IoT) is a promising technique which will allow a greater number of objects to be connected to the internet. The huge proportion of communications required to safely transport large amounts of data has become a major research topic in recent years. With the rapid rise of internet data interchange, storage of data and message integrity is becoming increasingly crucial. In public connections, data encryption is extensively employed to protect privacy. In network to secure data from unauthorized access Cryptography is used. There are majorly two categories of cryptography algorithms are defined as symmetric & asymmetric has been designed. To protect data from unauthorised users, to achieve security, secrecy, efficiency, data integrity identifying the best suited algorithm. In this article analysis of several encryption algorithm like symmetric & Asymmetric algorithms are discussed based on different parameters like key size transmission overhead, security, structure of algorithm etc.. The proposed method has been verified on Raspberry pi using packages pycrypto, Pycryptodome of python 3.9.1. The results found that using Asymmetric encryption algorithms like CP-Attribute method ECC & RSA outperformance.

**Keywords:** Cryptography, Symmetric Key, Information Security, Performance Matrices, Encryption, decryption, AES, DES, RSA, E-RSA.

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**NeuroQuantology2022;20(19): 1388-1394**

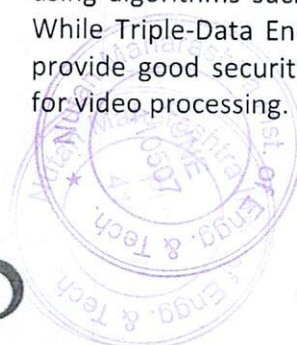
### 1 Introduction

Due to rapidly growing technologies there is huge amount of transmission of data over the network for transmitting large different type of files there is need of diverse techniques to transmit data over network with security aspects example if file type is image , audio, video or any type of data they have their own aspects depend on the type of data transmitted the security parameters need to be set .there are various encryption algorithms

are designed like symmetric or asymmetric encryption . Techniques that work well with text documents don't always work well with digital data. Due to the massive data sizes and real-time constraints. Although Text data is encrypted using algorithms such as DES, AES, and RSA [1]. While Triple-Data Encryption Standard and IDEA provide good security, they are not appropriate for video processing.

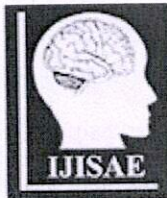
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## Word Sense Disambiguation: A Supervised Semantic Complex Network Approach

Chandrakant Kokane<sup>1</sup>, Sachin Babar<sup>2</sup>, Parikshit Mahalle<sup>3</sup> and Shri

Submitted: 06/06/2022

Accepted: 10/09/2022

**Abstract** -Lexical ambiguity in machine translation and information retrieval is the challenge. Lexical words where the word has multiple meanings. In Natural Language Processing before processing human of ambiguous commands should be done. The existing disambiguation methodologies disambiguate at context information. The main identified problem is what if an ambiguous sentence doesn't have enough context information. The proposed model elaborates an adaptive sentence semantic similarity based complex network approach and resolving it using semantic information. The discussed model represents the sentences of ambiguous words in a weighted complex network is constructed with respect to semantic similarities. The complex network of ambiguous sentences having lack of context information. The main goal of this model is to provide disambiguation of the paragraph or large document.

**Keywords:** Lexical ambiguity, Semantic Similarity, Complex network, Sense disambiguation.

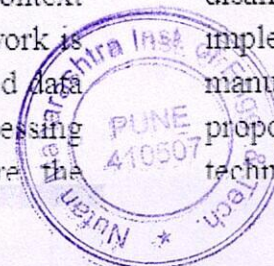
### 1. Introduction

Word Sense Disambiguation(WSD) is the critical problem in Natural Language Processing(NLP). The WSD is mainly introduced by the polysemous word also known as ambiguous word. The ambiguous word has the same spelling and pronunciation but different sense values. The ambiguous words are disambiguated with available context information. A lot of research is done with word embedding and machine learning based classifiers for WSD. The important challenge is disambiguating ambiguous words without context information in large documents. A complex network is constructed by the S-3 model. The sense annotated data is further used for disambiguation. While processing large documents it is very important to store the

represented with vertex and the weight value is considered represents the closest ambiguous sentence so that sentence is considered proposed adaptive model considers the context information to discover its correct sense. If we have context information (vertex) of the ambiguous word disambiguation. The supervised model is implemented with intelligent manual sense tagged data. The proposed model uses a graph-based technique for representing

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# Anomaly Detection of Attempt Through Genetic Algorithm and ANN

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**Abstract.** Vehicular ad-hoc network, commonly known as VANET, is an enabling technology for supplying security and useful information in modern transport systems but subject to a multitude of attacks, ranging from auditing passively to hostile interfering. When suspicious actions are discovered, intrusion detection systems (IDS) are essential instruments for risk reduction. Additionally, by sharing interactions among their nodes, VANET vehicle collaborations improve detection accuracy. Because of this, the machine learning distribution system is efficient, scalable, and useful for developing cooperative detection methods over VANETs. Because data is exchanged between nodes during collaborative learning, privacy concerns are a basic barrier. Through the data that is observed, a rogue node may be able to obtain sensitive information about nodes other than itself. This research suggests cooperative IDS for VANETs that protects machine learning privacy. Additionally, an intrusion detection classifier is trained on the VANET and the proposed alternating multiplier direction approach is employed to solve a class of empirical risk minimization issues. In order to apply a vector approach of dual disturbance to dynamically varying privacy and provide secure network communication, the usage of privacy differential is done to capture the notation of privacy.

**Keywords:** VANET · Security · Algorithm · IDS · Machine learning · Genetic Algorithm · ANN

## 1 Introduction

Road safety is a growing concern as the number of vehicles on the road rises and autonomous vehicle technology develops quickly. Information about safety, traffic control, navigation, and road services can be shared over VANET's communication system. VANETs are consequently thought to be susceptible to a variety of attacks, from passive eavesdropping to direct interference [1]. An intruder might seek and replay other vehicle messages, for instance, to acquire tools comparable to toll services. A targeted vehicle







## Road Sign Detection: A Survey

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### ABSTRACT

Road signs are important to ensure smooth Road flow without bottle necks or mishaps. Road symbols are the pictorial representations having different necessary information required to be understood by driver. Road signs in front of the vehicle are ignored by the drivers and this can lead to catastrophic accidents. This paper presents an overview of the Road sign board detection and recognition and implements a procedure to extract the road sign from a natural complex image, processes it and alerts the driver using voice command. It is implemented in such a way that it acts as a boon to drivers to make easy decisions.

Keywords: Deep Learning, CNN, preprocessing, road sign.

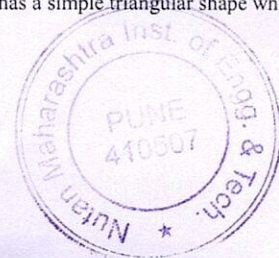
### Introduction

Traffic signs provide the necessary information and warn of potential dangers. They are an important part of keeping drivers and pedestrians safe on the road. Road signs play an important role in the smooth flow of traffic and avoid hazardous accidents. Because the primary purpose of traffic signs is to help prevent accidents and protect people on the road, it is critical that they be prominently displayed to command attention and placed in such a way that drivers have enough time to respond to the command given by each sign. From speed limits to directions on where and when to turn, traffic signs provide a wealth of information. Following traffic signs helps to keep everyone on the road safe by reducing the chances of drivers colliding with other vehicles, pedestrians, or cyclists. Accidents can occur, for example, because drivers do not notice a sign in time or by lack of attention at a critical moment. In bad weather conditions such as heavy rain showers, fog, or snow fall, drivers pay less attention to traffic signs and concentrate on driving. In night driving, visibility is affected by the headlights of traffic oncoming and drivers could easily be blinded. Hence, we propose a system for detection of traffic sign and convey the driver the sign using audio output.

### Literature Review

This paper describes an approach for detection and recognition of Road signs in real time with account for illumination and distance changes. A small single-board computer Raspberry Pi 2 and a webcam Hama AC-150 were used to implement the proposed algorithm. A scheme for determination Road sign location uses colour filter with morphological operators and Canny edge detector, identification of sign type is based on multilayer perceptron neural network. Variations of five Road signs were used to train and test an algorithm. As a result, experiments were successfully performed. Developed system is robust to light changes and is able to recognize Road signs 20 cm in diameter from 1.5–2 m distance.[1]

Colour represents an important attribute in the field of Road sign recognition. However, when the colour of the Road sign fades or the Road scene is collected in grey as in the case of Infrared imaging, then colour-based recognition systems fail. Other problems related to colour are simply that different countries use different colours. Even within the European Union, colours of Road signs are not the same. This paper aims to present a new approach to detect Road signs without colour attributes. It is based a two-stage sliding window which detects Road signs in the multi-scale image. Histogram of Oriented Gradients HOG descriptors are computed as a quality function which are evaluated by two SVM classifier; the coarse and the fine detectors. Different objects detected by the coarse detectors are clustered and a fine search is conducted in the areas where Road signs are more probable to exist. Experiments conducted to detect Road signs under different light conditions such as sunny, cloudy, fog and snow fall have showed a performance of 98% and very low false positive rate. The proposed approach was tested on the Yield Road signs because it has a simple triangular shape which can be found in





# CLOUD INTEGRATED SMART ATTENDANCE SYSTEM

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## ABSTRACT

Traditional class attendance registration relies on professor roll-calling, sign-in, and other inefficient methods. Despite the fact that facial recognition has been increasingly popular at home and abroad in recent years, there is no effective application system for this purpose on Chinese university campuses. The paper describes the CBCA System, which is an automatic class attendance registering system based on face detection and identification on cloud computing. Students simply need to stand in front of the camera for a few seconds to sign in, and sign-in data can be recorded in a local or central database. This technique considerably aids teachers in improving class roll-calling efficiency. Furthermore, rather than wasting time, pupils can concentrate on the content of the lesson. We discovered that the programme is adaptable, trustworthy, and achieves a 100% recognition rate in real-time after a few months of use for various classes. Cloud computing, face recognition, and automatic attendance are all terms that come to mind when thinking about cloud computing.

**Keywords-** Attendance system, cloud computing, facial recognition, roll calling, automated attendance.

## INTRODUCTION

A common research challenge for computer programmers is human identification and authentication. Face recognition, iris recognition, retina scan, voice recognition, fingerprint, signature, and voice analysis are only a few examples of biometric authentication. Face recognition is one of the easy and the powerful method which can be implemented in numerous industries for the Identification process since it is non-contact process. One of the applications in which the facial recognition technology provides a rapid reaction is the automatic attendance maintaining system. Various authors have presented various solutions for resolving the standard chaotic classroom attendance management system. The system is set up in such a way individually in order to ensure that attendance is created for each student ivy complete their course and classes. There are morerecords in the database. Correct, and the statistical analysis reports the findings date-by-date, course-by course, major-by-major, and instructor by instructor. Many automated technologies exist in the field that o identify capture the faces of the students and then attempt t and store them. A system called the CBCA System is proposed in this research that can provide 100 percent accuracy in recognition, which is a huge difficulty for many systems developed on their own DNN (Deep Neural Networks). Instead of constructing our own DNN, cloud AI is used to do face training registration and recognition to achieve the accuracy. Unlike previous similar systems presented in China, our method uses a video camera to capture each student's face one at a time, rather than using the entire classroom picture as an input image and attempting to recognize all of the faces in the



## FAST EMAIL SPAM FILTERING METHODS

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India

### ABSTRACT

The paper elaborates on how text analysis influences classification—a key part of the spam-filtering process. The authors propose a multistage meta-algorithm for checking classifier performance. As a result, the algorithm allows for the fast selection of the best-performing classifiers as well as for the analysis of higher-dimensionality data. The last aspect is especially important when analyzing large datasets. The approach of cross-validation between different datasets for supervised learning is applied in the meta-algorithm. Threemachine-learning methods allowing a user to classify e-mails as desirable (ham) or potentially harmful (spam) messages were compared in the paper to illustrate the operation of the meta-algorithm. The used methods are simple, but as the results showed, they are powerful enough. We use the following classifiers: k-nearest neighbours(k-NNs), support vector machines (SVM), and the naïve Bayes classifier (NB). The conducted research gave us the conclusion that multinomial naïve Bayes classifier can be an excellent weapon in the fight against the constantly increasing amount of spam messages. It was also confirmed that the proposed solution gives very accurate results.

**Keywords:** classifiers; e-mail; sms; ham; machine learning; spam

### INTRODUCTION:

The spam problem is an ongoing issue: in 2018 14.5 billion spam e-mails were sent per day. According to the Internet Security Threat Report released in 2019 by Symantec, spam levels for their customers increased in 2018. What draws the attention is that small enterprises were attacked more often than large companies, and e-mail malware reached stable levels. Therefore, there is a need to tailor even simple tools for detection and filtering of spam in all organizations.

Identification of the best-performing machine learning-based classifiers and selection of the one with the leading parameters. The proposed solution solves the problem of fast recognition of the most interesting parameters. This allows for quick analysis of data of higher dimensionality. This is especially important if large datasets are to be analyzed and we want to assure the proper scalability of our system.

### PROBLEM STATEMENT:

That this is any “attempt to abuse, or manipulate, a techno-social system by producing and injecting unsolicited and/or undesired content aimed at steering the behavior of humans or the system itself, at the direct or indirect, immediate or long-term advantage of the spammer(s)”. Here, we focus on so-called junk e-mails. These are unwanted messages sent at large scale by e-mail. The term spam refers to the undesired (or even harmful) e-mails, while ham is used to indicate the valid and important messages desired by the recipient. Additionally, we assume the scenario where junk e-mails are sent by botnets





# Promotion Prediction Using Machine Learning

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**Abstract:** The Promotion of employees is an important element of human resources management, and the core content of talent development, and play an important role in promoting the harmonious development of enterprises. Promotion of employees is difficult but very important and sensitive and comprehensive part there should be no mistakes.

To avoid the adverse consequences caused by uncertainty, use the fuzzy comprehensive evaluation for promotion scientifically, which can get very good results. This is paper which will provide the in-depth description of difficulties in comprehensive evaluation, and according to the theory and method, and to construct a suitable fuzzy comprehensive evaluation model for promotion prediction of employees. Elected according to the model managers, capable of performing their job requirements. The article provides a good way for leadership of a company to address the issue of staff promotion.

**Keywords:** Attributes, Classification, Machine Learning, naïve bayes algorithm, Prediction.

## I. INTRODUCTION

It has been observed in certain service industry sectors such as Information Technology that there is always a pressure for promotion to a higher grade. In a multi-grade human resource system where employee engagement and motivation is managed through promotion and monetary benefits, there is a substantial pressure in the organization especially during the annual appraisal period. [2]

Promotions are intended to provide recognition for proficiency and contribution by the employees, prevent attrition of talent and also communicate a greater expectation of performance in future periods. Typically, promotion process considers

- a) seniority in terms of number of years of service in the organization
- b) contribution to the organization measured through revenue or other performance measure
- c) seniority in terms of academic achievements, years of service in a specific grade and rating on performance measures.

## II. METHODOLOGY

All classification methods are supervised learning and decision tree techniques that classify data item into predefined class label. It is one of the most useful techniques in data mining to build classification models from an input data set. The classification techniques used here commonly builds prototypes which are used to estimate future data developments. The basic algorithm for decision tree induction is a greedy algorithm that constructs decision trees in a top-down recursive divide and conquer manner.[3]

classification is very fascinating topic for researchers as it helps in efficiently and accurately in classification of the data for getting some meaning out from the data. Decision tree are popular because they help to classify data in human readable way and is also easy to interpret than other methods for classification. Here the classification is used in the database of employees for the predication of employee performance on the basis of trained dataset.

As there are many ways for classification the decision tree method is used for classification of data for measuring the performance of employee in the organization. There is lot of information like seminar attendance, age qualification, number of project worked on. This all helps in prediction of the promotion effectively.





# Review on Deep Face Drawing Using CNN

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## I. ABSTRACT

## II. INTRODUCTION

Image-based object recognition is a well-studied topic in the field of computer vision. Features extraction for hand-drawn sketch recognition and retrieval become increasingly popular among the computer vision researchers. Increasing use of touchscreens and portable devices raised the challenge for computer vision community to access the sketches more efficiently and effectively. In this article, a novel deep convolutional neural network-based (DCNN) framework for hand-drawn sketch recognition is proposed. Catching the criminal on the basis of eyewitness description sketches which are generated by any software or hand drawn this technique becomes useful when there is deficiency of evidence. Recognising the sketches with face photos to find the results. A facial recognition is a technology capable of verifying a person by using deep learning is the part of data science and this creating more importance in law enforcement agencies.

Creating realistic human face images from scratch benefits various applications including criminal investigation, character design, educational training, etc. Due to their simplicity, conciseness and ease of use, sketches are often used to depict desired faces. The recently proposed deep learning based image-to-image translation techniques allow automatic generation of photo images from sketches for various object categories including human faces, and lead to impressive results. Most of such deep learning based solutions for sketch-to-image translation often take input sketches almost fixed and attempt to infer the missing texture or shading information between strokes. To some extent, their problems are formulated more like reconstruction problems with input sketches as hard constraints.

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## Review on Sign Language Detection based on Machine Learning

Anushka Thakur, Akanksha Patil, Pallavi Shirsath, Prof. Kishor Pathak

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### Abstract

The main means of human communication is through voice and language. We can understand each other's ideas because of our ability to hear. Even today, speech recognition allows us to issue commands. But what if someone is completely deaf and eventually unable to speak? Since sign language is the primary means of communication for deaf and mute individuals, it is important to conduct considerable study into automatic interpretation of sign language in order to preserve their independence. Numerous methods and algorithms have been created in this field with the help of image processing and machine learning. Each system that recognizes sign language is trained to identify the signs and translate them into the necessary patterns. In this article, Sign Language is recorded as a collection of photographs, processed with the aid of Python, and then converted to text.

### Full Text:

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### References

Sohelrana, K., Ahmed, S. F., Sameer, S., & Ashok, O. (2020, June). A review on smart gloves to convert sign to speech for mute community. In 2020 8th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)(ICRITO) (pp. 1262-1264). IEEE..

Aiswarya, V., Raju, N. N., Joy, S. S. J., Nagarajan, T., & Vijayalakshmi, P. (2018, March). Hidden Markov model-based Sign Language to speech conversion system in TAMIL. In 2018 Fourth International Conference on Biosignals, Images and Instrumentation (ICBSII) (pp. 206-212). IEEE.

Truong, V. N., Yang, C. K., & Tran, Q. V. (2016, October). A translator for American sign language to text and speech. In 2016 IEEE 5th Global Conference on Consumer Electronics (pp. 1-2). IEEE..

Kumar, D. N., Madhukar, M., Prabhakara, A., Marathe, A. V., & Bharadwaj, S. S. (2019, March). Sign Language to Speech Conversion—An Assistive System for Speech Impaired. In 2019 1st International Conference on Advanced Technologies in Intelligent Control, Environment, Computing & Communication Engineering (ICATIECE) (pp. 272-275). IEEE.

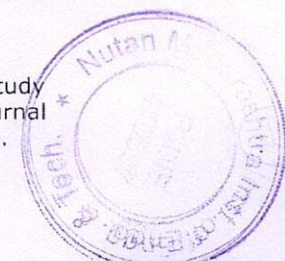
Dhivyasri, S., KB, K. H., Akash, M., Sona, M., Divyapriya, S., & Krishnaveni, V. (2021, May). An efficient approach for interpretation of Indian sign language using machine learning. In 2021 3rd International Conference on Signal Processing and Communication (ICPSC) (pp. 130-133). IEEE.

Poddar, N., Rao, S., Sawant, S., Somavanshi, V., & Chandak, S. (2015). Study of Sign Language Translation using Gesture Recognition. International Journal of Advanced Research in Computer and Communication Engineering, 4(2).

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## Review on Pneumonia Detection from Chest X-ray using Transfer Learning

*Shruti Jangam, Raksha Shetty, Punam More, Kishor Pathak*

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### Abstract

The artificial intelligence is based on automatic pneumonia disease detection for quick and easy detection of disease. Quick and accurate diagnostic tools help professionals start the necessary treatment as soon as possible, saving millions of lives. In addition to the lung infection caused by Covid-19, pneumonia is another life-threatening symptom condition that affects. Convolutional Neural Networks and Transfer Learning are used to develop and train models to detect pneumonia at early stage to easily cure that disease. This system goal is towards helping the patients with quick results.

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Vas, M., & Dessai, A. (2017, August). Lung cancer detection system using lung CT image processing. In 2017 International Conference on Computing, Communication, Control and Automation (ICCUBEA) (pp. 1-5). IEEE.

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Boban, B. M., & Megalingam, R. K. (2020, July). Lung diseases classification based on machine learning algorithms and performance evaluation. In 2020 International Conference on Communication and Signal Processing (ICCSP) (pp. 0315-0320). IEEE.

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Odaibo, D., Zhang, Z., Skidmore, F., & Tanik, M. (2019, April). Detection of visual signals for pneumonia in chest radiographs using weak supervision. In 2019 SoutheastCon (pp. 1-5).

Varshni, D., Thakral, K., Agarwal, L., Nijhawan, R., & Mittal, A. (2019, February). Pneumonia detection using CNN based feature extraction. In 2019 IEEE international conference on electrical, computer and communication technologies (ICECCT) (pp. 1-7). IEEE.

Kalgutkar, S., Jain, V., Nair, G., Venkatesh, K., Parab, K., Deshpande, A., & Ambawade, D. (2021, April). Pneumonia Detection from Chest X-ray using Transfer Learning. In 2021 6th International Conference for Convergence in Technology (I2CT) (pp. 1-6). IEEE.

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# Engineering Research Express



## PAPER

# Determining optimal parameters using Taguchi's design of experiments (DOE) for improving the quality of biogas generation process

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**Keywords:** biogas generation process, agricultural waste, design of experiments, methane percentage

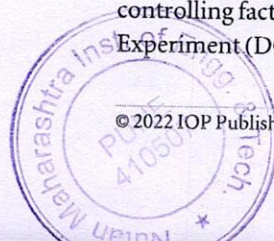
## Abstract

The use of an anaerobic process of biogas production depends on various parameters. Increasing the methane (CH<sub>4</sub>) production percentage is a critical task in an anaerobic process. In the present investigation, the role of the four most common process parameters are temperature, pH value, solid concentration, and C/N ratio optimized for two responses i.e. biogas production and higher methane percentage. A Taguchi Design of Experiment (DOE) methodology was used to investigate and analyze the effects of different parameters using an L9 orthogonal array. The investigation results for both responses showed that solid concentration had a higher contribution of 65.37% and 73.37% for biogas production and methane percentage respectively. The second rank responsible parameter for both the responses is pH having the same contribution of 18%. The initial pH and rotation speed of the process was the most effective parameters for comparison with others. While the other factors' temperature and C/N ratio contribution are 15.54% and 0.13% for biogas production and 3.48% and 4.25% for methane percentage. Biogas production and methane percentage model found with correlation percentage ( $r^2$ ) 0.98 and 0.92 respectively which is agreeable. The confirmation test results with Taguchi's model show errors of 7.46% and 2.43% for biogas and methane production percentages respectively.

## 1. Introduction

Renewable energy sources are important in today's modern society. Day by day energy demand increases and completion of energy demand is possible because of renewable energy sources and it is also helpful to control the global warming effect. In reality number of different renewable energy sources are available and that helps society to complete the energy demand [1, 2]. Such energy sources like solar, wind, and biomass are available in major unlimited sources. Biogas is an important source of renewable energy i.e. easily available in any place. Out of that, the biogas is produced with the breakdown process of organic matter. Biogas is mainly a combination of methane and carbon dioxide the production process happens in absence of oxygen. It can be produced with different types of materials like sewage, plant material, food or green waste, municipal and agricultural waste [3, 4]. The working of biogas production is depending on fermentation and an anaerobic digestion process that decomposes the waste by microorganisms for the generation of natural biogas. Practically any organic waste can be considered in the process, though factors such as temperature affect and pH the gas production [3, 5].

According to microorganism activity the production of biogas generation is controllable by considering or controlling various dependent factors like temperature, C/N ratio, pH, pressure, etc [6]. The optimisation of controlling factors are possible with various techniques Response Surface Methodology (RSM) and Design of Experiment (DOE). The experimental and mathematical model for biogas generation is developed using various



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# Development of Tack Welding fixture: an Overview

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**ABSTRACT:** In this paper a proposal is given on the appropriate fixtures needed during tack welding of front chassis for a wheel loader. The main load carrying member of any equipment is the chassis which consists of many sub-components that are joined by welding. To achieve high productivity while at the same time reduce unit cost and achieve interchangeability during assembly, it is important to have suitable setting arrangements during tack welding to improve the work holding of the components. This necessitates the development of fixture which helps in securing the job during tack welding.

**KEYWORDS:** Tack Welding, Copper Material (Pin & Plate) Battery Bracket.


## I. INTRODUCTION

In this paper Tack welding is an important welding process that most welders will become quite familiar with their career. For anyone new to welding you might be asking yourself "What is Tack Welding?". Tack welds are essentially temporary welds that help to hold two metals in place. The main purpose of the tack weld is to hold the two pieces of metal. Welding is a reliable and efficient metal joining process and widely used in construction, shipbuilding, steel bridges, and

nuclear power, chemical and petrochemical industries, supporting frames for pressure vessels and piping due to the demand from the design point of view. Tack welds are small and temporary welds used to hold parts together before a final weld occurs. Tack welds help keep the right alignment and distance between the parts that are being fused together. It's safe to say tack welding is pretty important. Keep reading to find out more about how these welds are used in the welding industry, as well as more on how the process works. In many different welding processes, the materials and parts will be clamped to fixtures that will prevent movement and keep the alignment correct. Tack welds are convenient because they help eliminate the need to clamp these materials. Often, tack welds are used for low-volume production jobs that don't justify the need to purchase fixtures. Tack welds can also be removed if you find that the parts being welded are not properly aligned. You can redo tack welds and refine them fairly easily.

Due to the highly conductive properties of copper, the heat from small particles of weld spatter that hits the face of the welding square is quickly conducted away, thereby preventing bonding of the materials



  
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# Design and Development of Oil Skimmer

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**Abstract** - : Oil skimmer is type of a machine which is used to extract the oil from river, sea, pond etc. or from small storage of water tanks. Like reservoir, tank or any storage device it is mostly used in a oil industries this oil industries are mostly seen in urban area. In today's world most of the oil industries are located in emirates Arab. They require such kind of machine which can extract the oil which is mixed in water or any liquid, so they mostly looking towards an efficient way to extract such oil and it should be extracted by cost efficient method.

So this kind of method is most efficient to extract the oil and in this the disc type skimmer is having a larger efficiency than any other type of skimmer

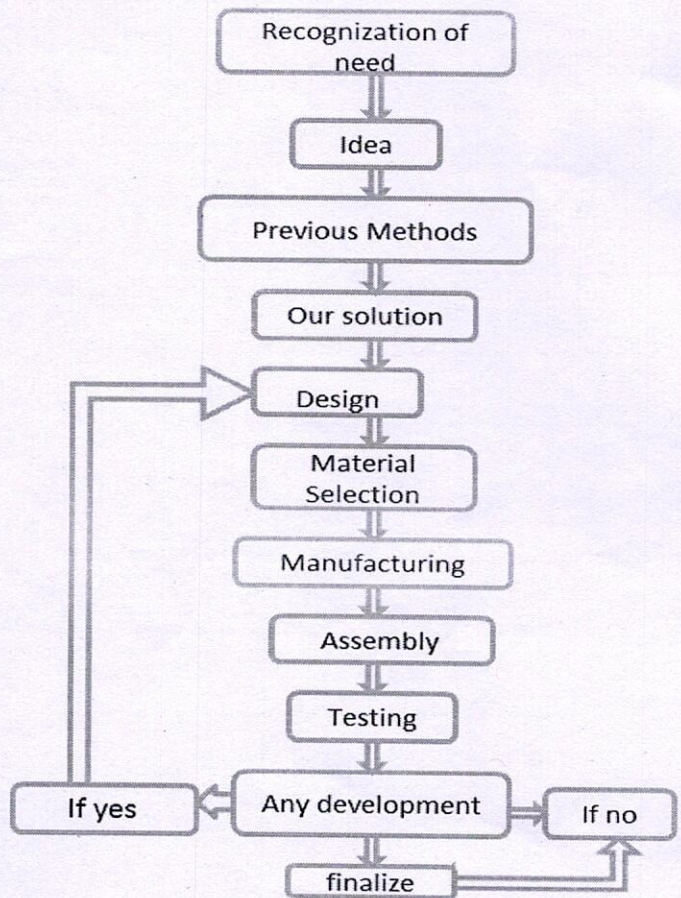
**Key Words:** Disc, larger efficiency, oil, machine, tanks, reservoir, extract

## 1. INTRODUCTION

In most of the oil industries, companies demand is more to extract the oil which is wasted after doing any operation. Very few amount of companies are using skimmers but they all are aware about the skimmer which can extract the oil from fixed position their machine that is skimmer is not portable, this produces more and more loss of oil and indirectly they are facing certain amount of loss issues because of the skimmer they used, such skimmer are not portable that means that device only extract the oil from the certain amount of area it is difficult to extract the oil above their working range due to this reason most the companies are looking towards an advancement technology, so overcoming from this problems portable oil skimmer is to manufactured. So looking towards this need and observing the existence skimmer some kind of oil skimmer is to be produced which can cover the large amount of area, so for extracting the oil from large amount of area portable disc type oil extractor is manufactured.

Here after observing this all problems which is facing in Companies we have decided our topic that is nothing but a design and development of disc type oil skimmer.

## 2. METHODOLOGY



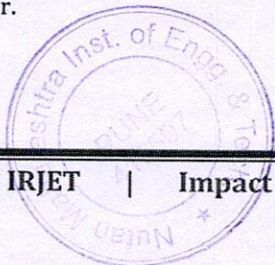
## 3. CONSTRUCTION AND WORKING:-

### A. Working Principle:-

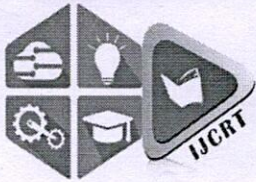
Extracting oil with the help of surface tension phenomenon this extract the oil which is stucked on the surface of the water with the help of scrapper.

### B. CONSTRUCTION:-

This assembly is mainly consist of a rectangular frame made of the material mild steel (M.S) square tube this frame is firstly designed in a CAD software after design the manufacturing is then implemented step by step. The frame is welded with each other.







# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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## DESIGN & FABRICATION OF FIXTURE ASSEMBLY TO PERFORM ACCURATE AND DEFECT FREE FLARING OPERATION ON CASING TUBE

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**Abstract:** This paper gives an evaluate on research papers associated with fixture meeting and flaring tube technique.

The Fixture meeting is used with a view to perform flaring operation on casing tube that's one of the components of surprise absorber assembly. The fixture assembly is hooked up over the park solar tool machine on which flaring operation consists of bushing, top plate, backside plate, backside support fixture and pinnacle support fixture. The hydraulic press device attached to the fixture assembly will observe about 2 bar stress on casing tube in the course of flaring operation through plunger.

**Index Terms** - Introduction, About components in fixture assembly, flaring process, figures, references.

### I. INTRODUCTION

The fixture meeting is used with the intention to perform flaring operation on casing tube that is one of the additives of surprise Absorbent meeting. The fixture assembly is mounted over the park solar device gadget on which Flaring technique is done. The fixture assembly used for casing tube flaring operation consists of bushing, top plate, backside plate, backside help fixture and pinnacle aid fixture.

The hydraulic Press gadget attached to the fixture assembly applies required strain on casing tube in the course of flaring operation via plunger which expands one side of the casing tube resulting inside the nosing or flaring of the tool. With the assist of fixture meeting and flared casing tube the mating part is placed over the tube and is welded for similarly system.



  
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# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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## SOLAR POWERED GRINDING MACHINE WITH FLYWHEEL

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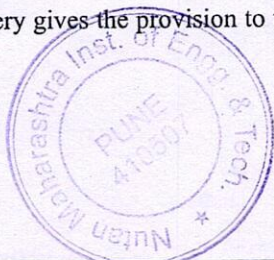
**Abstract:** The variable of the current work is to frame and create solar power fueled auto charging grinding machine with flywheel which is applied for grinding any condition of things like round, square, and polygon. Grinding gadget is accustomed to grinding the one of a kind forms of material. The grinding gadget is became through the single level attractiveness engine. Hence our mission to be precise solar fueled auto charging grinding system with flywheel is a special type of System. As indicated by way of the form of material to be grind, the granulating device can be changed. This undertaking offers diffused elements of granulating specific shapes and sizes of segments. This system may be broadly related in all types of ventures. By means of differing the pulley sizes we are able to get a top of the line velocity of extra than 10,000 rpm if vital. The principle trade we need to make is to have a totally encased engine to preserve out coarseness. Inside the present paintings DC powered grinding machine which manipulate is drawn by way of the 12 volt DC Battery. This battery is charged via the solar power based totally board and the alternator which is coupled to the Grinding device shaft.

**Index Terms** – Introduction, Flywheel, Calculation and results, Conclusions, References, etc.

### I. INTRODUCTION

Purpose of our mission is to build a solar grinding system with flywheel. It's miles used to grind the machining surfaces to extremely good end and accuracy. The precept parts of this attachment are predominant body, motor with bearings, batteries, drum and flywheel etc. So this task, solar twin powered grinding system may be very tons useful, since it is supplied with appropriate nice of power resources and simple operating mechanism. Sun and kinetic power restoration system, it refers to the mechanisms that recover the electricity that might usually be misplaced when reducing velocity through loading of grinding machine. The energy is saved in a mechanical structure and retransmitted to the crushing wheel for you to help the speed increase. There are chiefly two sorts of contraption - battery (electrical) and flywheel (mechanical). Electric frameworks utilize an engine generator incorporated in with belt transmission which changes over mechanical strength into electric strength as well as the other way around. As soon as the electricity has been harnessed, it's far saved in a battery and launched while it is required. This method reduces the power requirement of the gadget by 20% universal. As a result, battery and flywheel aggregate is the properly proper for this software. Inertial mass is accelerating to a completely excessive rotational pace and retaining the energy in the gadget as rotational electricity. The energy is changed again by utilizing by generator from the flywheel. Thus this machine is minimally use strength and supply lots higher electricity output and electricity efficiency. This machine is fabricated on the frame setup, where the compound rest. When the motor is on, the abrasive grinding stone and therefore the rotor wheel are rotated. When the daylight is incident on solar panel board, the panel board absorbs the heat energy from the sun and it converts it to the power and sends this to the battery for the storage provision. Solar power means all the energy that reaches the planet from the sun. Solar electricity is that the technology of converting sunlight directly in to electricity. It's supported photo-voltaic or solar modules, which are very reliable and don't require any fuel or servicing.

The battery gives the provision to the D.C motor which is paired to the generator and grinding machine with the assistance of belt drive.



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# Study Of various Leakage Testing Machine and Defects in Casting Process.

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**ABSTRACT:**As the title suggests it is a Special Purpose Machine . This machine is manufactured in industry as per the requirement of the customer in order to specify testing need. As structure of many of the component is of the form of a casting tube they must be precisely tested for leak. Hence, for preventing the leakage in the component their is requirement of Special Purpose Leak Testing because the component are required to check for a particular product itself, once used then there is no need of such machine. Hence we make use of SPM. Also industry will train us to design and manufacture the whole machine. The most important consideration is the testing method. Hence Testing based on the application of component testing method is selected. Mostly casting method is used for manufacturing of components. Because of which many defects occur into it which may cause leak in the component. As we know we can't do welding or machining to this casted products so that the defects are minimised. Hence here further we will discuss about the defects that are caused due to casting process and also we will discuss about the various methods to detect the leakage in the component.

**KEYWORDS:**defects in casting, SPM, Automation,Leak testing machine methods, detection of leakage,measurement of leakage and location of leakage.

## I. INTRODUCTION

In industries components are tested to check whether there is leakage present in the component or not. Leak can be defined as the escaping of different fluids or gases from a close medium through unintended crack, joint, hole or porosity in an enveloping wall. As components are used at high application of pressure so they must be leakage proof so that the pressure inside it is not

leaked.Many components are manufactured through casting process. Hence while manufacturing the component lots of defects are associated with it. The defects like Crack, dent, hole, porosity, etc are present into it which causes leakage into the component and hence will affect the functioning of part. In order to prevent the leakage there are many methods to test the equipment for solving this problems. If the leakage rate is present above or below certain specified level then the machine must able to detect the leakage. here are many types of methods which are used for leakage testing such as ultrasonic measurement, bubble test, water immersion bubble test.

## SOAP BUBBLE TESTING:-

In Soap bubble test method the component is not allowed to submerged in water, instead pressurised air is passed through the component. This unit to be examined is sprayed with a pressurized cleaning soap solution. If the operator is able to see the bubbles shaped by way of gas escaping from that means leak is there in component. Some of them have a broom applicator and others have a dabber as an applicator. Some brands actually might have a twig applicator to fast cover massive regions of tubing in a quick quantity of time. This is an advantage that however it likewise messy and timeingesting to smooth up.Some of the soap solutions may have an antifreeze base to prevent them from freezing in the iciness time. Others might also have a decrease density to make them even greater touchy to very tiny leaks.This technique has a better sensitivity than water immersion. It has capability to detect the detection upto 10mbar and is suitable for extremely huge systems. This soap solution technique is quality used while the approximate vicinity in which a leak can also exist is thought. In this situation, the cleaning soap answer is best used in



## Design & Development of Fixture For Shox Pulling

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**Abstract** - This project is designed for calculation and fabrication of a shock absorber pulling fixture that will be used to detect sealing missing operation of damper with cycle time reduction. This fixture will assure the sealing which is present in between damper cylinders. The project focuses to reduce customer complaints regarding sudden breakage of damper which causes complete failure of suspension assembly that is fitted at the rear end of piaggio mini truck. In this project scope designing and fabrication of a pneumatically operated fixture has done which increases volume of production with decreased number of faulty products. This report is based on the work undertaken for designing a fixture assembly and testing it in real production system. This system is specifically designed for piaggio mini truck dampers.

**Key Words:** Damper, Shock absorber, Assembly, Fabricated.

### 1. INTRODUCTION

This project is grounded on the designing and fabrication of a shock absorber pulling fixture that will be used to detect sealing missing operations. A shox absorber is designed to soak up or dampen the contraction. It rebound the springs suspension shock absorbers at all times. It keeps tires in contact with the road when the vehicle hit any dip or bump in a road vehicles at all time. Vehicle suspension and springs move so that the tire will stay in contact with the road and absorb the energy. In Hydraulic fluid shock absorber the shock absorbers dampen the movement of the springs by converting the springs kinetic energy into thermal energy. Also it degenerates when vehicle suspense moves and then piston moves up and down through the oil- filled cylinder. The up and down movement of the piston forces small amount of fluid through orifices in the piston head. Since only a small amount of fluid is forced out, this slows down the suspension movement and dampens the compression and rebound of the springs.

A fixture plays an important role while manufacturing a product. A fixture is a device for locating, holding and supporting a work-piece throughout a manufacturing operations A fixture is a device used to constrain all degrees of freedom of a work-piece in a given co-ordinate system.

Locating, support and clamping are the prime functions of a fixture. The main objective of fixture is to hold and locate the work-piece during any machining operation but in our project. We are using fixture as a holding device as well as for quality testing purpose to improve the rate of production without getting a faulty product dispatched. We are using a pneumatic operated fixture for inspection of damper.

### 2. METHODOLOGY


The project will be finish in the following manner:

- a. Visit to the industry
- b. Identification of problem
- c. Idea of project
- d. Collection of data
- e. Design of CAD model
- f. Analysis on Ansys
- g. Material selection
- h. Development of Fixture
- I. Modification Testing and Assembling of Fixture

### 3. PROBLEM STATEMENT

The main problem is that while manufacturing the rear side shock absorber (Damper), there is a sealing operation on the upper mount (eye) side where the bushing is mounted upto the sealing. Sealing works as a stopper. From the bushing there is opening for piston and piston rod to gets connected to upper mount (eye).



  
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